RAILROAD MAGAZINE

JULY

25¢

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"Before I completed your lessons, I obtained my Radio Operator's license and immediately joined Station WMPC where I am now Chief Operator." HOLLIS F. HAYES

"Am now installing Radio equipment and doing electrical work at ——— Shipbuilding Co. on the Navy's new "PC" Subchasers. N.R.I. training again assisted me in obtaining this desirable war job." DALE H. HOAG

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J. E. SMITH, President, Dept. 3GS9
National Radio Institute, Washington, D. C.

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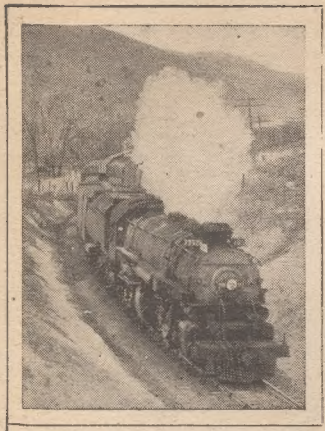

RAILROAD MAGAZINE

Originally Railroad Man's Magazine, founded 1906

July, 1943 Vol. 34, No. 2 25 Cents

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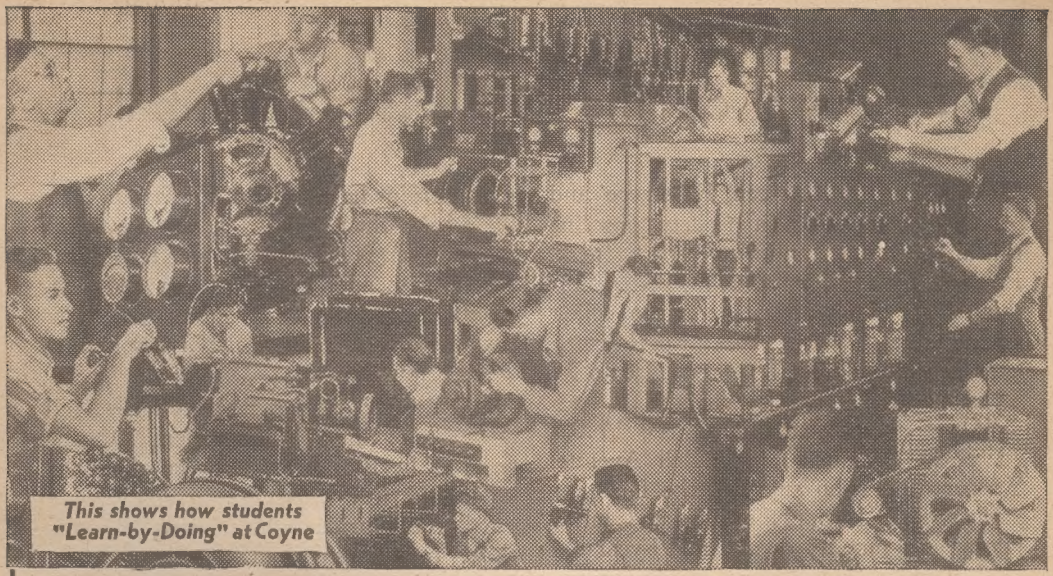
Published monthly by Popular Publications, Inc., 2256 Grove St., Chicago. Editorial, advertising, subscription, and executive offices, 205 East 42nd St., New York City. Harry Steeger, President and Secretary, Harold S. Goldsmith, Vice President and Treasurer. Entered as second class matter January 6, 1943, at post office at Chicago, Ill., under Act of March 3, 1879. Copyright, 1943, by Popular Publications, Inc. Printed in U. S. A. All rights reserved. Single copy 25c. By the year $2.50 in U. S. A., its dependencies, and Mexico and Cuba. Canada, $3.00. Other countries, $3.50.

Manuscripts sent to this magazine should be accompanied by enough postage for their return if found unavailable. Publisher cannot accept responsibility for return of unsolicited material.



This shows how students "Learn-by-Doing" at Coyne

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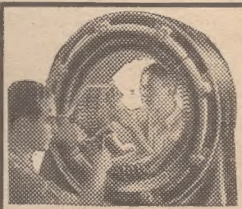

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Sundown on the Old Florida Central

TWICE daily between Fellsmere and Sebastian, Fla., a rickety gasoline railcar plods over ten miles of rusty track. Powered by a 1923 model T Ford motor; this relic of palmier days is the sole rolling stock of the old Florida Central Railroad Company, a pike now too obscure to be listed in the *Official Guide*.

"On the day after Christmas, 1940," writes D. B. Russell, 931 Bell Avenue, Yeadon, Pa., who supplied the facts for this article, "I rode the Florida Central jalopy and met its operator, 19-year-old J. M. Pennington. Being the only passenger, I sat up front. The wind whipped past my ears. I clung tightly to my side of the seat, while Pennington screamed at me, above the *clank-bang-clank* of the wheels, about the track's condition and what state highways had done to private railroads."

In 1911, when the line was built as the Fellsmere Railroad there were no highways along its route and the two-car mixed trains had a sort of monopoly. The little pike then boasted a wood-burning locomotive (Number 101), one freight car and a passenger coach. Later the Ammoniate Products Corporation took over the company and gave it the high-sounding name it now bears.

With the Florida real-estate boom, rail business expanded. The ancient 101 was replaced by 103, a steam engine of similar type. But just when FC dividends were good, the Florida bubble burst. By this time, too, a smart-looking automobile road had been built between Fellsmere and the coast. Hit by these two blows, the rail traffic dwindled. The shabby, unpainted coach was left in a shed to collect dust. In 1926 a hurricane razed the shed and the freight depot. Fire took up where the storm had left off, destroying the machine and repair shops and the water tower.

Number 103 bravely kept running until 1931. Then she was parked on a siding, permanently. Old 101 and the coach had been scrapped in the late twenties. The 103 lingered until the depression's depth, when she also was junked. Modern trains are too heavy for the Florida Central's light rails and uncertain bridges, but the small railcar still chugs through the palmettos and pines which are overgrowing the right-of-way.

"What a treat is this road for us fans who like to ride off the beaten path!" comments Mr. Russell. "Sometimes we find an intriguing little pike buried (as this one isn't) in the *Official Guide* with the disheartening notation, 'Freight service only.' The FC, on the other hand, operates its car for mail, express and passenger service only. Any of you who'd like to try this line had better hurry, for even young Pennington's resourcefulness can't keep that model T rambling forever. It's almost sundown on the old Florida Central."

"Better take that Yankee pot-roast off the menu; we just crossed the Mason-Dixon Line"

BILL, YOU SURE HAVE A SWELL BUILD! DID YOU TRAIN FOR A LONG TIME?
ABSOLUTELY NOT! THE ATLAS DYNAMIC TENSION SYSTEM MAKES MUSCLES GROW FAST!

Here's the Kind of MEN I Build!

Charles Atlas

An actual, untouched photo of Charles Atlas, holder of the title, "The World's Most Perfectly Developed Man."

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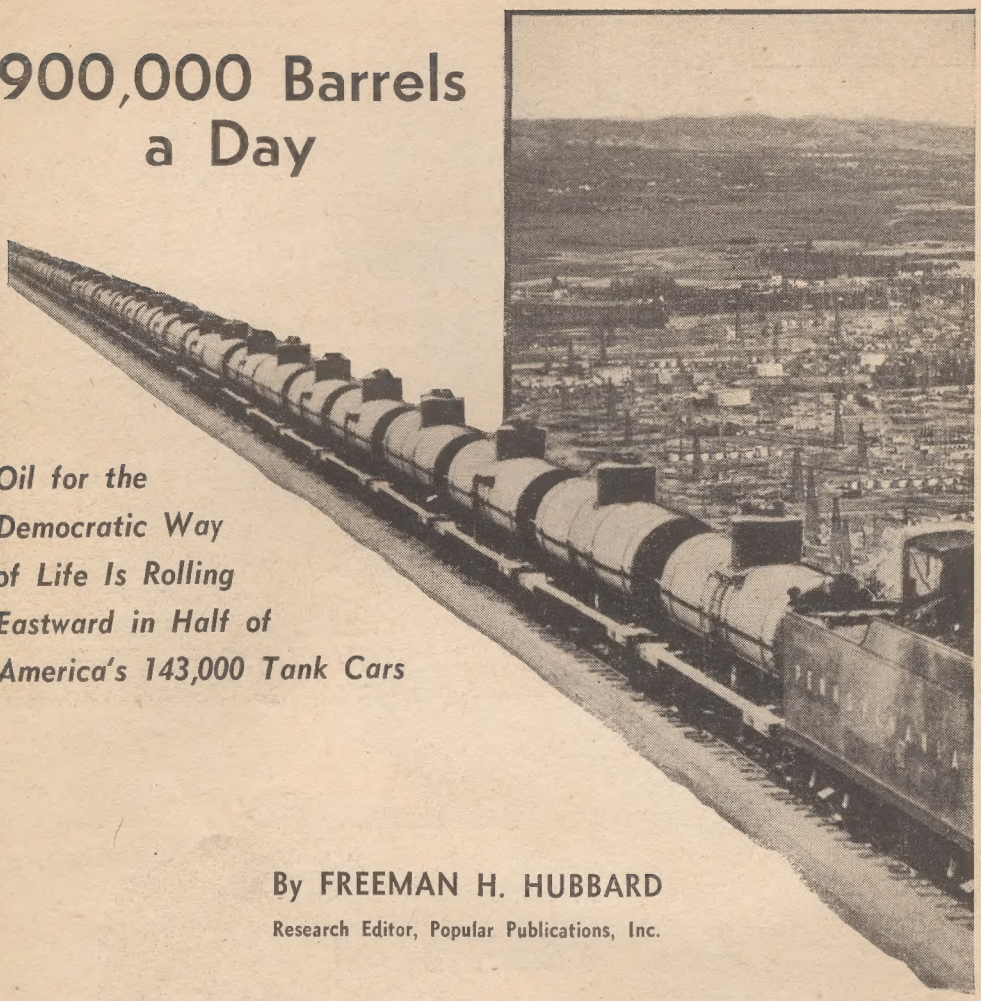


Oil for the Democratic Way of Life Is Rolling Eastward in Half of America's 143,000 Tank Cars

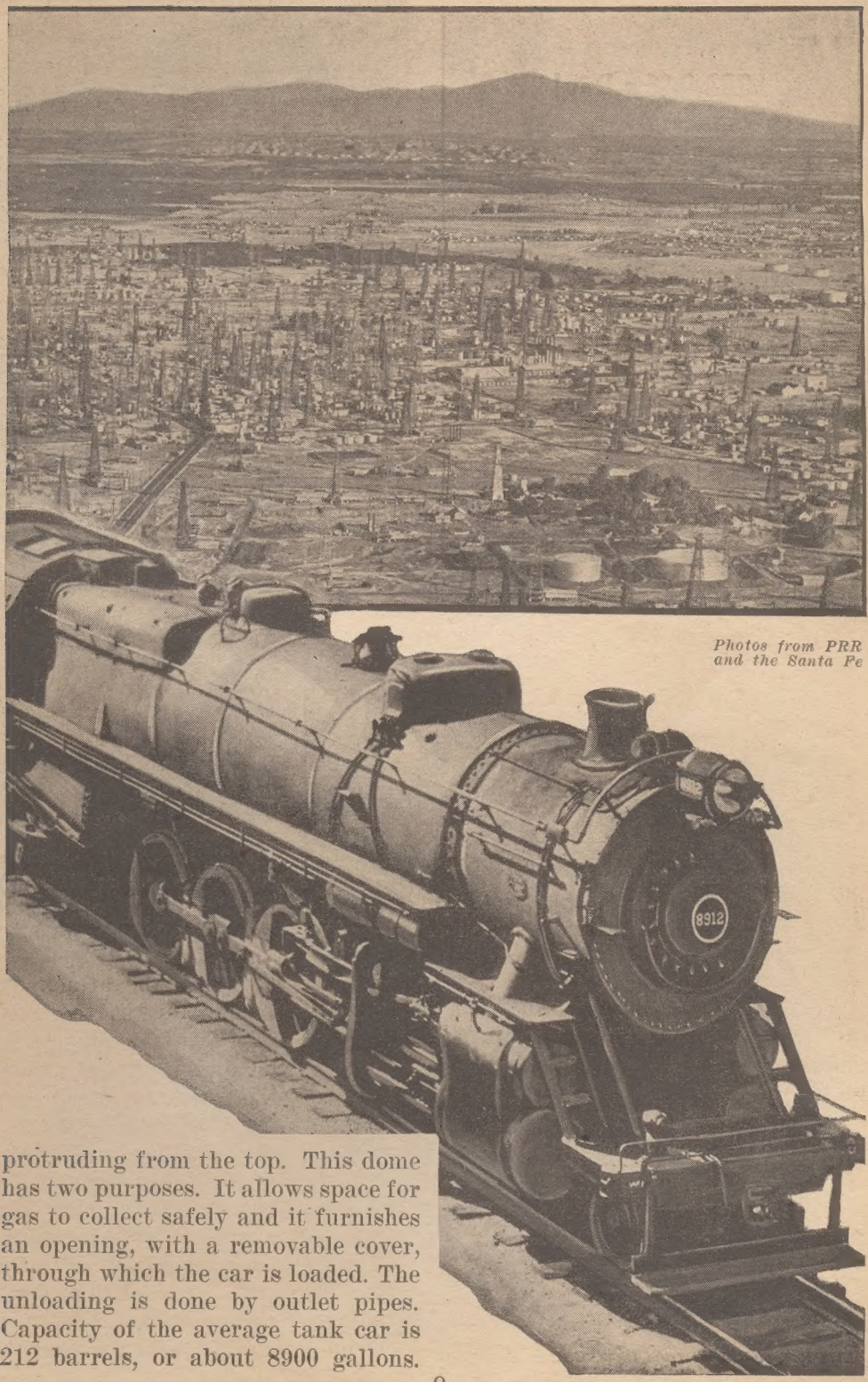
By FREEMAN H. HUBBARD

Research Editor, Popular Publications, Inc.

ON EVERY FRONT in the global war, oil is shaping the pattern of victory. By *oil* we mean petroleum and its products—power, fuel and lubricants that keep the wheels turning in a hundred thousand industries. If we had no petroleum the Army tanks would be stalled, the planes grounded, the submarines beached, the jeeps abandoned. In fact, without the aid of petroleum these weapons could not even be built.

The side which controls the richest oil supply, transports it most rapidly and employs it to the best advantage will dictate the terms of peace. Nazis move their panzer divisions with oil from the wells of Rumania. They tried to get oil from the Russian Caucasus, too, but were beaten back. In the Pacific area the Japs hold a tight grip on oil of the Dutch East Indies. The American oil which will help to dislodge them is now being carried by tank cars, boxcars, pipe lines, ships and motor trucks.

Tank cars are used mostly for hauling gasoline, kerosene and other refined products by rail. Many of them take crude oil from wells to refineries. They are huge, sturdy, steel cylinders, usually black or aluminum-colored, each with a small dome

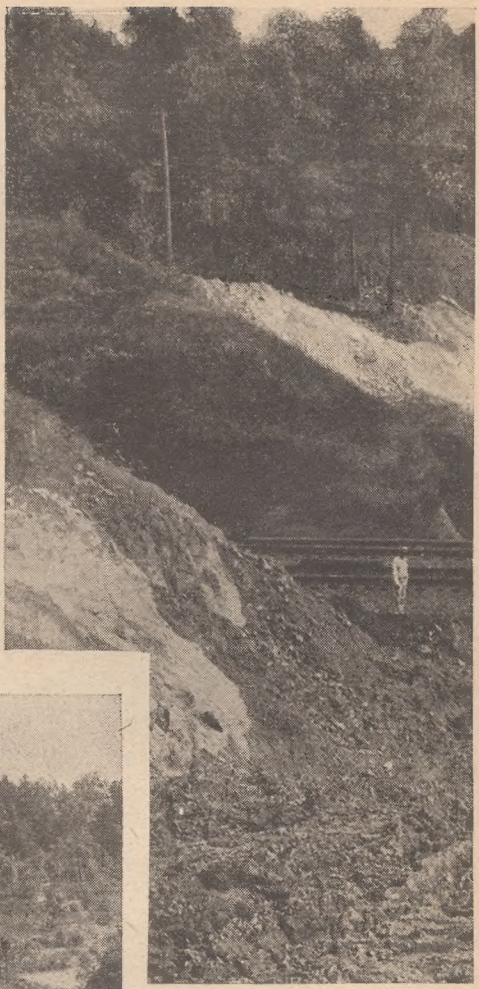


Photos from PRR and the Santa Fe

protruding from the top. This dome has two purposes. It allows space for gas to collect safely and it furnishes an opening, with a removable cover, through which the car is loaded. The unloading is done by outlet pipes. Capacity of the average tank car is 212 barrels, or about 8900 gallons.

933,966 a Day!

AS WE GO to press, rail deliveries of petroleum products to the Atlantic seaboard for one week have just reached the new all-time peak of 933, 966 barrels a day. This includes 912,919 barrels hauled by tank cars and 21,047 in drums loaded into boxcars. The previous top total for a week, last September, averaged 856,710 barrels a day.



ERIE hotshot (below) crossing Delaware River at Mill Rift, Pa.

Erie Railroad photo from Chas. E. Coe

Before the attack on Pearl Harbor, the normal demand for crude oil and its products on the Atlantic seaboard was around 1,500,000 barrels a day, and 95 per cent of it was brought in by sea. To handle this much oil by rail would have required a solid train of more than 7000 cars rumbling eastward every day in the year!

EVEN in the greatest and most modern of all pipe lines, which is shown being laid under a railroad track, oil cannot move nearly so rapidly as it does in tank cars

Of the 143,000 tank cars now in the United States—"tankers the subs *can't* sink"—only about 9000 belong to railroads. Prior to the war these were used mostly to haul fuel for Western oil-burning roads. The other 134,000 are privately owned. In the latter class, more than 37,000 had been designed for non-petroleum handling (chemicals, molasses, alcohol, vegetable oils, milk, etc.), but many of these have since been diverted to petroleum. Private owners include oil producers, tank-car leasing companies and big consumers.

In the midsummer of 1941 it was estimated that more than 20,000 tank cars were standing idle on sidings and in storage yards, for the simple reason that the iron horse's traditional enemies—pipe lines and water carriers—had taken over much of the country's oil transportation. Early in 1942, however, the efficient fleet of tank ships which the oil industry had built up was feeling the effects of Pearl Harbor. Many tankers were sunk by prowling U-boats. Others were requisitioned for military and lend-lease needs.

Coastwise traffic sank to such a low level that on May 22nd, 1942, oil had to be rationed in the Eastern States, not because of any shortage in the commodity but because of inadequate facilities to transport it. Alarmed by the situation, Harold L. Ickes, Federal Petroleum Coordinator, the Association of American Railroads and the oil companies went to work on the problem.

Car service agents of the AAR Tank Car Section, under the capable direction of William E. Callahan, spent a month rounding up the country's tank cars. Every rusty, dilapidated tanker that could be repaired, filled with oil and set rolling again was quickly restored to service. From all over the nation a strange medley of new and old equipment was wheeling oil to the stricken industrial East. Nobody will ever know how many boneyards and scrap piles were raided to make up the total of 70,000 cars, or nearly 70 per cent of all those in petroleum service in U.S.A., which are now rushing their quotas of liquid gold toward the blue Atlantic. To handle these tankers nearly 1500 locomotives, steam, electric and Diesel, are pounding the rails.

The Office of Defense Transportation has forbidden the use of tank cars for trips of less than 200 miles, and the railroads voluntarily slashed their freight rates on oil for the national emergency. To replace every tank steamer transferred to our Allies or sunk, 210 tank cars were needed. So the long trains of tank cars began thundering eastward. At the same time, pipe lines which had fallen into disuse were reopened.

A MAP of the country's pipe lines shows, roughly, a broad curved belt or network extending from Texas, Louisiana and Oklahoma in a northeasterly direction through Chicago and the northern Ohio Valley to western Pennsylvania, with outlets on the Atlantic coast at New York Harbor and Delaware Bay, while a big new line is being pushed rapidly from the lower Mississippi Valley to Chesapeake Bay. The curved belt has an offshoot from Wyoming. On the West Coast is an important but isolated patch of trunk lines in southern California. And that's about all, except for a sprinkling of short stretches in various oil centers. Thus we see that large areas of the United States have no pipe lines, particularly in the West, the Northwest and New England. Thousands of miles of new pipe lines have been built in the past five years.

In some cases, pipe lines shorten the tank-car hauls. In other cases, the tank cars pick up oil directly at wells in the Southwest and carry it all the way to the East and New England. The war has mothered several types of makeshift tank cars. For instance, boxcars take kerosene-filled metal drums from Texas to New England. Upon reaching their destination, the drums are promptly removed from the cars and emptied into bulk storage tanks near the railroad terminal. The empty drums are then reloaded into boxcars and hurried back to the Southwest for additional loads.

Thirteen tank cars were released to handle oil to the East when the Missouri Pacific fitted up an equal number of flatcars with 4200-gallon metal water tanks. The latter are being used as water cars for extra gangs as well as bridge and building forces, also for company fuel oil service.

VITAL steel is still being allocated to essential industries for building tank cars. Here you are looking through an unfinished oil tank in the great American Car & Foundry plant at Berwyck, Pa.

Some boxcars even carry oil in bulk. These are each divided into four compartments by means of wooden bulkheads. In every compartment is a canvas container, treated with synthetic rubber, suspended by means of pulleys and ropes. A 40-ton boxcar can transport 10,000 gallons of oil with these canvas "tanks." The "tanks" are equipped with valves and pipes for rapid loading and discharge. Since they are collapsible they can be folded up when not in use, permitting two-way service whereby the cars carry oil to the East, then return loaded with other

commodities. In some instances, gondolas also have been converted into tankers.

One road has a four-compartment tank car for handling oil to points where full tank-car lots cannot be handled. This eliminates the barreling of oil at the general storehouse for shipments to small outlying storehouses and thus avoids extra handling of drums. The car has four 2000-gallon tanks and is equipped for car, valve, kerosene and fuel oil. It is billed to a particular store as a carload lot. After the first store empties one tank, the car is reconsigned to other places.

Supplementing the work of tank cars are the pipe lines we have mentioned. Most pipe lines are used only for conveying crude oil from wells to refineries, while a few thousand miles are devoted to gasoline and natural gas. Other petroleum products move almost exclusively by rail, to some extent by truck. The big competition between rails and pipes is for volume of crude and refined oil.

Some readers will be surprised to learn that pipe-line maintenance and dispatching are handled with a thoroughness that suggests railroading. Steam or internal-combustion engines drive the liquid through steel pipes laid near the earth's surface, pumps usually being placed about 35 miles apart. The lines, themselves, vary in diameter. The first one put into service measured a modest two inches, while the line now being completed from Longview, Texas, to New York City is 24 inches in diameter.

Pipe-line operation is more complicated than the general public suspects. Take, for instance, the Great Lakes Pipe Line Company, whose tubing ranges from four to eight inches. All gasoline movements of this company are controlled from Kansas City by a chief dispatcher with three shifts of "delayers" under him. There may be as many as three simultaneous movements of gasoline spotted at intervals throughout the system. A pipe-line dispatcher, even more than a railroad DS, knows within a few hundred feet of where every moving shipment is located. At a moment's notice he can trace the movements with charts and maps showing mileage and capacity.

He is familiar with the diameter of pipe on each section of the route. He knows when, where and how much of the shipment will have to be stored temporarily enroute, on account of

ABOUT 20,000 tank cars were standing idle in railroad yards and on sidings when the call came for them

Portrait by Harris & Ewing

WM. E. CALLAHAN, manager of the AAR tank car section, car service division, supervised the rounding up of urgently needed railroad tankers

the pipe diameters and the pumping speeds, and for how long. The dispatcher also controls all pumping speeds. He designates tankage and movements throughout the system. Check samples are reported to him at intermediate points. With all necessary facts at hand, he can calculate the time of delivery within a few minutes.

SUCH is the modern pipe line. It stems back to the year 1861. Curiously enough, the tank car was evolved at the same time, or maybe

SYNTHETIC rubber bags pinch-hit for tank cars in the national emergency. Joseph B. Eastman, Director of the Office of Defense Transportation (left), is seen examining one of these bags. The other man is Reid B. Gray, laboratory chief

a few months later. The exact dates are lost in history. We'll come to that shortly. But first let us see what happened at Titusville, Pa., on the 27th of August, 1859.

That date, as every schoolboy should know, marks the drilling of a pioneer oil well by "Col." Edwin L. Drake, a former railroad conductor. Drake's well was not the first one in the world, as some people think. The oil business is really about

"FLEXITANK" cars have recently been developed to carry petroleum. This invention by Mark J. Fields changes a boxcar into a tanker by dividing the interior into four sections, in each of which is suspended a waterproofed canvas container

six thousand years old. There is evidence of its existence in Mesopotamia as long ago as 4000 B.C. Ancient Egyptians used a petroleum product to embalm their mummies. Alexander the Great (356-323 B.C.) invaded what are today the Mosul oil fields and even then witnessed a demonstration of the wonders of petroleum. The Chinese are said to have drilled for oil before Christ was born.

But give Drake credit. The primitive well that he drilled in 1859 helped to usher in the age of modern machinery and made it possible for railroading to reach its present high state of efficiency. Before Drake came along, petroleum was little more than a curiosity. Because of his discovery, Pennsylvania overshadowed the country and the rest of the world as an oil producer for 25 years —hence the bulk of our story deals with events in Pennsylvania.

It is only fair to add that oil was found in Kansas in 1860, in Colorado in 1862, in Wyoming in 1867, in California in 1875, in Ohio and Illinois in 1886 and in Texas in 1887. Also that since 1928 Texas has produced more oil than any other state in the Union, with California second and Oklahoma third. Pennsylvania has slipped into eleventh place. The United States leads the globe in this industry, followed by Russia and Venezuela, second and third respectively.

Oddly enough, certain key events in oil history occurred exactly ten years apart. In 1819 Drake was born.

In 1829 a group of men digging for brine near Burkesville, Ky., struck the first oil gusher in America of which we can find a record (but let it flow off into the Cumberland River because they did not realize its value). In 1839 John D. Rockefeller was born. In 1849, the year of the California gold rush, a pioneer named Samuel M. Kier started selling oil commercially (the first person known to have done so) and Drake became a conductor on the New Haven Railroad. In 1859 Drake struck oil. In 1869 Rockefeller was laying the foundations of the Standard Oil Company. And in 1879 occurred the Battle of Bottle Run (pictured on our front cover).

Kier owned salt wells at Tarentum, Pa. As a by-product these wells yielded "Kier's Petroleum, or Rock-Oil," sold all over the country as a nostrum for man and beast. Pictures of his brine wells, showing the derricks he used for boring and pumping, were exhibited in drugstore windows. Becoming interested in one of these pictures, a man named George H. Bissell hired Drake to drill for oil the same way. He chose Drake partly because, as a railroad man, Drake could travel on a pass, thus saving expense.

BIRTHPLACE of a billion-dollar industry. Time has obliterated this humble, board-covered well at Titusville, Pa., but the site is marked by a $60,000 memorial park

The dramatic details of the ex-conductor's discovery on the banks of Oil Creek are too well known to need repetition here. For a while Drake prospered, selling oil from his own well and, as justice of the peace, getting small fees for drawing up oil leases. But he was not shrewd enough to capitalize on the billion-dollar industry he had founded. He lost his money on Wall Street, became an invalid, and at the time of his death in 1880 was living on charity. Fifty-four years later a memorial park was dedicated to Edwin L. Drake on the site of the original oil well.

A BOOM that far exceeded in importance the California gold rush, of ten years before, followed Drake's striking oil. While Drake was pumping out 25 barrels a day and selling them at $25 each, swarms of speculators, adventurers, boomers, business men, gunmen and careless ladies were flocking to the scene from far and wide. From a mere lumber camp in the woods, Titusville grew almost overnight to a city of perhaps 50,000 people. Wells were drilled along Oil Creek and in the Allegheny Valley as rapidly as money and equipment could be found.

The output in 1859 was two thousand barrels; in 1863 it exceeded three million! Oil was bought and sold amid scenes of wild speculation. The price per barrel soared and dropped like an elevator. From ten dollars in January, 1860, it fell to ten cents in December, 1861. Great floods of oil were gushing from the earth,

but adequate means were not yet available for its storage, transportation, refining and marketing.

In the first year of the American petroleum industry the liquid gold was hauled by tank wagons and flat-boats to refinery centers such as Erie, Pittsburgh, Boston, New York, Philadelphia and Baltimore. No railroad existed then between Oil Creek and any of those cities, and pipe lines did not come until later. Transportation difficulties made it next to impossible for men to move the heavy apparatus needed to build a refinery near Oil Creek itself, until later on.

BECAUSE a military title was an asset on the frontier, the civilian Edwin L. Drake was introduced as "Colonel" when he went to Titusville to dig for oil

Prior to the beginning of the Civil War, the only railroad within thirty miles of the wells was the Philadelphia & Erie, a single-tracked pike 60 miles long between Warren, Pa., and Erie, Pa. Oil shipped over this line was transferred to the Lake Shore road at Erie, then to New York City via the New York Central and its connections. A competitive route to the metropolis was over the New York & Erie, connecting with the Lake Shore at Dunkirk, N. Y.

These roundabout routes were complicated still further by changes of gage. For instance, the NYC was 4 feet 8¼ inches; the Hudson River road and the P&E, 4 feet 8½ inches; the Erie (NY&E), 6 feet; and the Ohio roads, including the Lake Shore, 4 feet 10 inches.

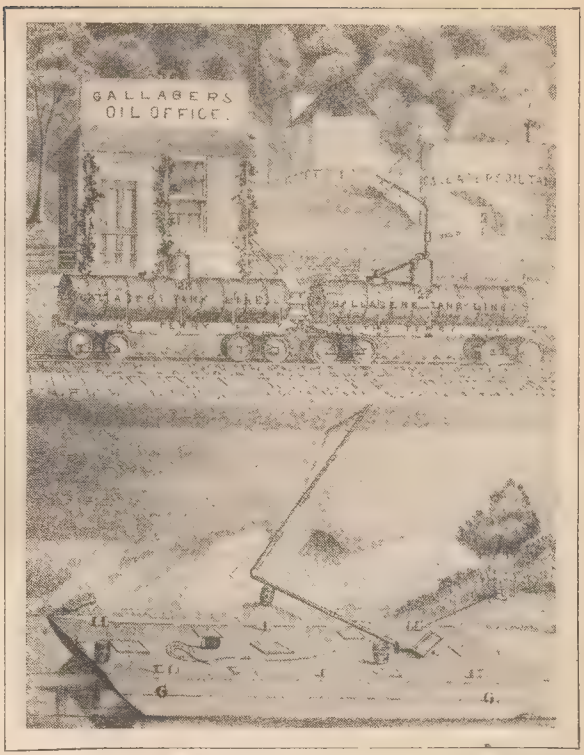
In 1860 an ambitious, close-mouthed and pious youth named John D. Rockefeller decided to size up the oil situation at first-hand. He traveled by rail from his home in Cleveland, Ohio, to Meadville, Pa., and made the rest of the trip to the Oil Regions, thirty miles, by wagon trails through the forest country.

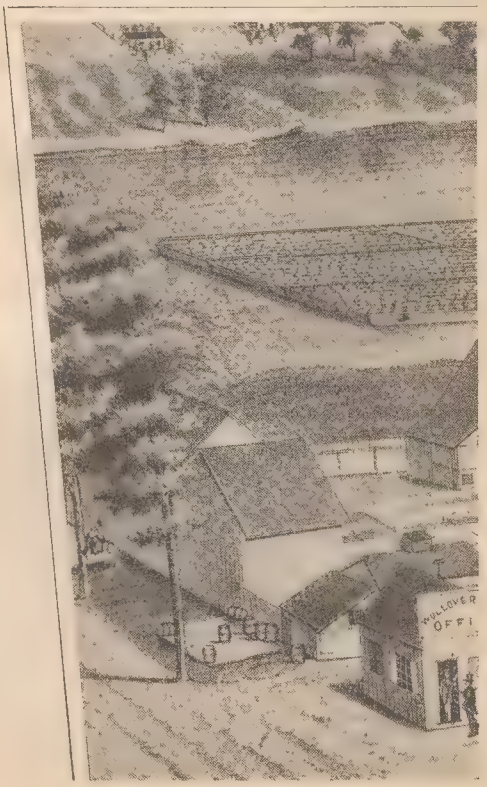
The confusion that John D. found in the vicinity of the Creek appalled his methodical soul. Tiny settlements had mushroomed into busy cities. Vice was rampant. Horses strained at overloaded oil-wagons mired to their hubs. Prices were fantastic. Producers resorted to fraud and violence. John D., noting the effects of disorder and cut-throat competition, decided that a strong curb was needed. He himself was to apply that check within a few years. Convinced that the production of petroleum at its source was a hazardous business, the youth shrewdly recognized that the biggest money to be made in oil was through refining and marketing. So he set about the slow task of making himself master of that industry. How well he succeeded may be gathered from the fact that John D. Rockefeller eventually built the greatest industrial corporation the world has ever known. The history of that corporation is worth reading.

But our story is primarily about railroading. The Philadelphia & Erie, which at first had the edge on its competitor, the Erie, in hauling crude oil, was not the simple type of railroad we know today. Besides being compelled to transfer westbound shipments to a road of another gage, the 58-inch Lake Shore, the P&E itself

was a composite of ten different lines, each of which insisted upon its own timetables, and rate schedules! If you shipped via that route you had to make a separate bargain with each of the ten.

Then the far-reaching Pennsylvania Railroad leased the P&E and determined to standardize the situation. For this purpose, in 1865, the Empire Transportation Co. was founded by Col. Joseph D. Potts, a Pennsy division superintendent. This concern enacted a middle-man role. It mediated between railroads and shippers so as to simplify a complicated procedure. Although it did not make rates, the Empire solicited freight, supplied cars and terminal facilities, and collected payments from consignees. Shippers were glad to deal with a strong organization which could give them the cars they needed and handle the bothersome details of transportation. So the new concern prospered mightily. Colonel Potts, who later became General Manager of the Philadelphia & Erie, was a powerful figure in railroad circles.





MEANWHILE, in May, 1860, British capitalists had begun to build a road, the Atlantic & Great Western, westward from Salamanca, N. Y. A year later they had reached Corry, Pa., 60 miles distant, connecting with the P&E at that point. By July, 1863, still during the Civil War, the A&GW had built a branch to Franklin, Pa., and had extended to Oil City by 1865, the year Potts launched the Empire Transportation Co.

During that time the A&GW also had been pushing westward and, by means of leases of other roads, it entered Cleveland, where young Rockefeller was already beginning to scramble to the top of the oil-refining trade. Then, in 1865, the A&GW management complained it could not handle more than one-fifth of the oil business that was offered. So they bought new equipment.

The A&GW was proud of being able to move petroleum over the most direct route between the Oil Regions and New York, with no change in track gage the entire distance, and boasted of its part in making Cleveland a great refining center. Because it handled an enormous volume of business, the A&GW was able to give shippers a relatively low rate.

With uneasy eyes, Pennsylvania Railroad officials watched the meteoric rise of the A&GW to a dominat-

TWO early-type tank cars, in this print dating back seventy years, bear the name of Gallager's Tank Line, Smith's Ferry, Pa. Note the pipe line into the flatboat. The other picture shows the transportation of oil in barrels by rail and on river barges lashed together

ing position in the oil trade. Soon they were developing an aggressive through-freight policy of their own. The oil business in those days was, as we have said, highly speculative. Nobody could foresee when or where new wells would be found, how prices might fluctuate, or what new uses for petroleum products might be devised. So until 1865, when the Civil War ended, the Pennsy moved cautiously. But the growth of the Atlantic & Great Western, together with the Erie, caused the PRR to throw caution to the winds.

Boldly taking over the Philadelphia & Erie, the PRR planned to make it the foremost carrier of oil to tidewater. At the same time, under the energetic leadership of Vice President Thomas A. Scott, the Pennsy bought control of a new broad-gage line, the Oil Creek Railroad, which had been serving the Erie, and added a third rail to "the Creek" for standard-gage equipment. Two further Pennsylvania steps were the creation of Empire Transportation and the opening of the P&E all the way to Philadelphia. Thus Tom Scott's road put in an emphatic bid for the expanding oil trade, flinging down the gauntlet to the Erie-A&GW hookup.

The Pennsy, having its main offices in Philadelphia, was determined to make that city the foremost oil-refining center. Its rivals were equally bent upon developing Cleveland, where John D. was toiling to build up his monopoly. Figures for 1865 show 750,000 barrels of oil hauled by the A&GW from the Oil Regions, but less than half that amount routed over the P&E. And in the same year 700,000 barrels were poled down the Allegheny River to Pittsburgh, for in those days the railmen and watermen fought each other ruthlessly for business.

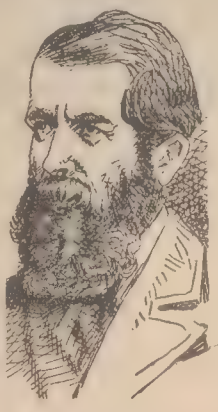
REFINERY and tank cars owned by the Central Railroad of New Jersey 55 years ago

In the battle between the PRR and the Erie-A&GW, Corry was a key point. Shipments over the Pennsy-controlled Oil Creek Railroad could proceed from Corry either to Salamanca and go via the Erie, or over

WOODEN barrels were hauled by teamsters to the railroad tracks from the wells and were loaded into freight cars. Four big rail systems battled for the business of moving crude oil to refineries

the P&E and other Pennsy-controlled lines to Philadelphia. A shorter route to Philadelphia (and New York) included the P&E, the Catawissa, the Lehigh Valley and the Philadelphia & Reading. Each of these lines was putting up its own fight for oil traffic. The assistance of each was sought in the war between Tom Scott's road and the Erie-A&GW, which Jay Gould dominated.

As an opening gun, in 1865, the Erie-A&GW challenged the legality of a deal that Scott had made with the Catawissa; but Scott came out on top. As a result of this victory the Pennsy controlled the shortest route between "the Creek" and the Atlantic Ocean. You can judge the value of the Catawissa cutoff from the fact that oil shippers paid the P&E the tidy sum of twelve dollars extra for every car using the short cut.



JAY GOULD led the Erie's fight for oil traffic

While the railroads were at one another's throats, a new element was coming into the struggle: the pipe line. Even after rails had been laid into the Oil Regions, they did not extend right up to the wells. Teamsters made good money carting crude oil in tank-wagons the intervening distance. As early as 1861, however, a group of enterprising oil men near Titusville evolved what they thought was an ingenious scheme to save cash—namely, they would lay a wooden pipe, four inches in diameter, in a trench along Oil Creek as far as Oil City. Through this pipe, the men planned, oil would flow by gravity, and at the far end it would be barreled and sent to refineries by rail. But one of the interested parties refused to sign the contract, and what would have been the world's first oil pipe line did not materialize.

LEAKING from a hillside tank at Bradford, Pa., on January 15th, 1884, oil flooded 100 yards of railroad track and burst into flame as a train came through. The train was destroyed, three passengers perished and Engr. Pat Sexton was badly burned

Then in February of 1862 a company was chartered to lay and operate an oil pipe line from any point on "the Creek" to the Philadelphia & Erie Railroad. What happened to this company is not a matter of record. The proposed line came to naught. That same year a 75-mile pipe line was projected, but 4000 irate teamsters banded together

blocked the plan when it was put before the State Legislature.

Also in 1862 a pioneer named J. L. Hutchings laid two-inch tubing from Tarr's farm to the Humboldt refinery, three and a half miles, and in 1863 started to run oil through it. The newfangled contraption had leaky joints. Much oil was lost. Even so, this was the first oil pipe line actually put to use anywhere, so far as we can learn. Oil was pumped through the tubing at the rate of 2000 barrels in 24 hours, until teamsters tore up the line.

OIL KING John D. Rockefeller as he looked in 1870

But Hutchins was undaunted. The next year he laid a second pipe line, made of cast-iron, from the Sherman well to the Oil Creek Railroad. This one leaked so badly that most of the crude oil seeped away into the ground. Hutchings tried again; but eventually died in poverty and frustration, probably never dreaming that some day more than 120,000 miles of pipe lines, owned by about sixty companies, in America alone, would stem from his humble efforts, and that long lines would be operated in foreign lands also.

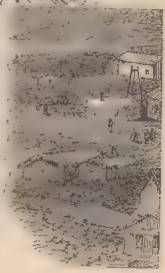
Unknown to himself, J. L. Hutchings had won. The methods he had experimented with were to revolutionize the transportation of oil and, incidentally, prove a bed of thorns to rail officials.

In 1864 a successful pipe line was demonstrated by Samuel Van Syckel, an oil producer. Van Syckel bought five miles of pipe, two inches in diameter, and laid it from Pithole, Pa., to Miller's farm. Then, by using three pumps, he shot his oil through this pipe at the rate of eighty barrels an hour. The cost, he figured was only $1.25 per barrel, as contrasted with the average of three to four dollars per barrel he had been paying for wagon haul.

The success of this venture fanned the teamsters' fury. Seeing the loss of their bread and butter, they cut the pipe line—a trick which railroad men were soon to try—and did all they could to interfere with Van Syckel's business. But the teamsters' cause was lost. Additional pipe lines were laid and new acts of violence flared up. Storage tanks were burned mysteriously, lines were cut or plugged, employes were beaten, and producers who sent their oil to the railroads through the pipe lines were threatened. So much terror was spread throughout the Oil Regions that in 1866 producers asked the Governor for military protection.

At first, believe it or not, the railroads favored the pipe line, because it lowered the cost of conveying oil to their property. But before long they were singing another tune.

The infant oil industry was in the hands of speculators. New wells were being put into operation so rapidly that there was no way to stabilize prices. The story is told of one producer who refused an offer of $5 a barrel for 200,000 barrels of oil he was holding in storage—until the opening of new wells forced him to unload at $1.20 a barrel. This situation, coupled with an acute shortage of barrels, brought the price of oil



BARRELS of crude, ready for rail shipment at the Franklin Petroleum Oil Works, Franklin, Pa. For many years, Pennsylvania oil fed the lamps of the Eastern seaboard and the rest of the country

down to almost nothing. Many wells were plugged; others gushed forth uselessly into streams. The entire industry came to a standstill in 1863 at a critical period of the Civil War when General Lee invaded Pennsylvania. In 1869, ten years after Drake had drilled his well, oil was going to almost every country in the world. Tallow candles and sperm-oil lamps had given way to petroleum.

Henry Harley, one of the builders of the Hoosac Tunnel, laid an important line connecting the oil regions with the Atlantic & Great Western Railroad. This pipe line soon acquired a monopoly. The Pennsylvania Transportation Company, which operated it, was the chief rival of the Empire Transportation Company, sponsored by the Pennsylvania Railroad. On the face of it, you might think the rivalry between Erie-A&GW and PRR for oil business had been intensified. But the opposing forces were not clearly defined. Stockholders of the new pipe-line monopoly included Tom Scott of the Pennsy and Jay Gould and Jim Fiske of the Erie.

IN 1870 the situation simmered down to this: PRR interests controlled most of the shipment of crude oil from the wells to shipping points, and with the Erie-A&GW they held a monopoly on the movement of crude to the Eastern seacoast.

Not satisfied, Scott reached out octopus arms to dominate all the oil pipe lines on behalf of the Pennsy, and even had a monopolistic charter rushed through the State Legislature blocking the efforts of all persons and companies to lay pipe lines without permission of the PRR. By 1866 the

WHEN Rockefeller visited the Oil Regions in 1860 he found the whole area in a state of confusion and cut-throat competition. Gradually the industry became stabilized as railroads brought the refinements of civilization. Below is a glimpse of Franklin, Pa., nearly eighty years ago, when "the Creek" was still a collection of rather primitive boom towns

war between Pennsy and Erie-A&GW interests to dominate oil transportation had developed into a mad scramble to cut railroad rates, provide cars and lay pipe lines.

Three powerful railroads had extended branches into the Oil Regions: the Pennsylvania with the P&E; the Erie, with the A&GW, and the New York Central, with the Lake Shore & Michigan Southern. From then on it was a three-cornered battle. All of these roads, evidence shows, resorted to trickery to get oil traffic. They issued standard freight rates, which were perfectly legitimate on the surface, but secretly they undercut those rates for the benefit of large shippers. Only the little fellows were forced to pay the regular published rate.

The rebate system tended to make the big shippers bigger and freeze out the small ones altogether. By this means, as we shall see, the Standard Oil Company under John D. Rockefeller became a gigantic monopoly, the like of which had never been seen before.

We have already mentioned John D.'s early trip to the oil region of Pennsylvania. In 1862 the frugal young fellow took his first flier in oil. His firm invested $4000 in a refinery. Later he teamed up with a new partner, Henry M. Flagler, who is best remembered in rail circles today as the man who built the overseas extension of the Florida

East Coast Railway. Then in June, 1870, John D. merged his interests into one great company and systematically set about swallowing up his competitors.

As Flagler testified later in a Congressional inquiry, Rockefeller was granted his first rebate in 1867. Flagler made a deal with Vice President Devereux of the Lake Shore whereby his firm would stop using waterways and would ship sixty barrels of crude on the Lake Shore 365 days a year, regardless of business fluctuations, in return for which the railroad would knock 15 cents off its rate of 42 cents per barrel from the Oil Regions to Cleveland.

"I went home in delight," Flagler recalled some time afterward. "I had won a great victory, I thought. A year later I discovered that other refiners received similar favors."

AGGRESSIVE Tom Scott shaped the Pennsy's oil policy

Supplementing the Lake Shore deal, Rockefeller's firm wrested substantial rebates from the A&GW on its eastbound movement of refined oil. Both agreements were, of course, cloaked in secrecy. John D. insisted on that. But rumors leaked out, arousing public indignation. Before the year ended, the Ohio State Senate passed a bill prohibiting railroad rebates. The same bill was beaten in the House, not because of opposition to it but on the ground that such legislation would not be effective unless it were backed up by laws in neighboring states.

Another form of discrimination favored one locality or corporation against another. Take the case of the Pennsy, which transported crude from Oil City to Philadelphia, 441 miles, for the same price it charged from Pittsburgh to Philadelphia, only 355 miles. This, in effect, gave 86 miles of free haul to Oil City producers. Beside that, the PRR made Pittsburgh refiners pay 5 cents higher per barrel for shipping refined oil than for shipping crude, even though the former was cleaner and less inflammable.

The granting of rebates became more flagrant as the competition between roads was sharpened. Big shippers began demanding as a right what they once had requested politely as a favor. Each shipper became suspicious of the size of rebates donated to his rivals.

THERE was also a "drawback" system, which worked as follows: An independent refiner named George Rice paid a certain road 35 cents a barrel to haul his oil. This, so far as the public was aware at the time, was the rate to Rockefeller also. But the carrier secretly refunded ten cents a barrel to John D., this being the *rebate*. At the same time it gave Rockefeller an additional dime for each barrel of petroleum Mr. Rice shipped over the road, this being the *drawback*. Thus, apparently unknown to himself, Rice was paying a double cash tribute to Standard Oil. It is hardly necessary to add that he was soon bankrupt.

Rockefeller defended this method of competition rather cynically by quoting the story of a "bright young man" who said, "I am opposed on principle to the whole system of rebates and drawbacks unless I am in

DURING the Civil War, before tank cars were invented, petroleum was barreled and hauled in boxcars. This method recently has been revived to meet the Global War tank-car shortage

on it." Admitting that his company had profited from rebates, the oil king stated:

"Standard Oil of Ohio received no advantages from railroads for which it did not give full compensation. The reason for rebates was that such was the railroads' method of doing business. A public rate was made and collected by the railroad companies, but so far as my knowledge extends, was seldom retained in full. A portion of it was repaid to the shipper as a rebate."

According to John D., the rebates which railroads paid to Standard Oil were justified by the large and steady volume of Standard Oil traffic and the terminal facilities which he made available to the carriers. He claimed that the roads not only offered him rebates but, in their desire for competitive traffic, even urged this form of payment upon him. It is interesting to note that Rockefeller's attitude with regard to rebates was in no wise different from that of his competitors, except that the latter were less successful.

Prior to 1872 Standard Oil was just another big concern refining and marketing petroleum. Then John D. and his associates maneuvered a coup. They bought an old Pennsylvania charter with fantastically sweeping provisions which authorized them to engage in any kind of business in any country. Armed with this grant, they organized the South Improvement Co., with Peter H. Watson, general freight agent of the Lake Shore, as president. This concern, with a meaningless name, controlled less than ten per cent of the nation's oil refining business, but secured broad concessions from the three great railroads entering the Oil Regions (PRR, Erie, NYC) by claiming to represent the bulk of America's refineries.

All three roads agreed to favor the South Improvement in rates and other matters, although Tom Scott of the Pennsy and Colonel Potts of the Empire Transportation Co. pointed out that the new organization totally ignored the oil producers, who certainly were vital to the industry.

The railroads were assured by promoters of the South Improvement Co. that under the grandiose scheme they would be freed from cut-throat competition in the oil trade. But, of course, they must pay the piper. One feature of the deal was that each railroad involved was to give the South Improvement Co. complete copies of all waybills for petroleum shipped over their lines. Thus South Improvement would have inside data on what the outside oil companies were doing.

The setup seemed to be foolproof. John D. lost no time in visiting each of the twenty-five or thirty independent refineries in Cleveland, where Standard Oil was located, and demonstrating that the South Improvement Co. would eventually give Standard Oil undisputed sway over the industry.

"If you are smart," he said, in effect, "you come in on the deal with us. Sell your refinery to us at our terms. We'll pay you in either cash or Standard Oil stock, whichever you prefer. I advise you to take the stock. It will be a good investment."

ACCORDING to John D.'s brother Frank, who was a business enemy of the oil magnate, the independent companies were warned by South Improvement that unless they climbed onto the Standard bandwagon their property would be valueless, "because we have got great advantages with the railroads." As a result partly of coercion and partly of misrepresentation, Frank testified, nearly all of the Cleveland independents secretly allowed themselves to be absorbed by Standard Oil. Thus, as years went on, the oil trust swallowed up the little fellows in most areas throughout the country where oil was found and developed.

Under agreements with the railroads, Standard Oil was aided in submerging its competitors in many ways. In the first place, South Improvement was allowed a rebate on all oil shipped; and in the second place, the railroads were to pay South Improvement a similar sum as a "drawback" on all oil shipped by independent concerns. The net result would be, for example, that Rocke-

FROM Texas and other oil-producing states, seemingly endless strings of tankers speed toward the blue Atlantic. This picture was made in the Mohawk Valley on the New York Central

feller would have to pay only 84 cents for a haul which cost a competitor $2.56.

Defenders of Rockefeller and the South Improvement Co. pointed out that the scheme would stabilize the oil trade by halting rate wars and vast price gyrations. Yes, it would have achieved those aims, all right. The lion and the lamb would have lain down together—which was fine, except for the fact that the lamb was inside the lion!

In making his rounds of the Cleveland independents, Rockefeller pledged each of them to secrecy and warned the men not to splurge too much with the new profits lest their rivals suspect what had happened. But one refiner who was left out of the Promised Land became so indignant that he disclosed the whole setup to the unconsulted producers in the Oil Regions. A few days later the Lake Shore backed up the South Improvement Co. by announcing new rates on oil shipments that were nearly 100 per cent higher than the old ones! This increase, from which the South Improvement boys alone were immune, threatened to ruin the producers. The *Titusville Herald* and other papers in the Oil Regions gradually published the details of what they called a "wholesale robbery."

The producers struck back. They blacklisted all refiners who were in on the deal and agreed to support all refiners who were not in the South Improvement Co. At the same time they boycotted the roads involved and made plans to build railroads and pipe lines of their own. This retaliatory war lasted for six weeks. The Cleveland refineries affiliated with Standard Oil were forced to shut down temporarily, since no producer would sell to them, even at premium prices.

Peter H. Watson, nominal head of South Improvement, who had a refinery business of his own, lost thousands of barrels of oil when mobs opened the faucets on his tanks to show their disapproval of his organization. The whole nasty mess was aired in Congress. One witness after another testified that only Cleveland refiners were taken in on the scheme, and even some of those had yielded to force. An additional cause of irritation was the revelation that oil prices to consumers were to be raised as a result of the South Improvement deal.

With a storm breaking over their heads, the railroad executives ran to cover. Jay Gould of the Erie, Commodore Vanderbilt of the Central, and George B. McClellan, the Civil War general who had become president of the A&GW, disavowed all part in what the Congressional committee called "gigantic and daring conspiracy." The Pennsy, the Erie and the A&GW tried to effect a compromise by offering to take certain additional oil men into the inner circle if they would agree to let the original South Improvement contracts stand; but the latter bluntly declined.

SOME tankers, such as these shown on an Army railroad in Louisiana, are painted aluminum to help insulate them against sun heat

There was nothing for the rail chiefs to do but repudiate the deal. The State Legislature followed this up by revoking the South Improvement charter. By agreement made March 25th, 1872, rail rates were stabilized at the advertised figures—no rebates or drawbacks (at least, that was one of the terms agreed upon). But Standard Oil ignored this solemn pact and went about, as before, making deals with the carriers and obtaining rebates. The railroads soon found the non-rebate agreement being violated right and left.

In 1874 the Erie leased its Weehawken, N. J., yards to Standard Oil, which now routed its oil to New England and the South by means of tank ships. At the same time, Erie agreed to tip off Standard Oil to all petroleum movements over its system. Every refinery that entrusted an eastbound shipment to the Erie had to pay Standard a fee for the use of its terminal. Then Standard began dividing its movement of refined oil between the Erie and the New York Central. The Standard thus had the advantages of the Erie's terminal and the Central's pipe-line monopoly.

TOM SCOTT, who had become president of the Pennsy on the death of J. Edgar Thompson, resented the fact that his road had been left out of the Standard Oil fold, and put forth a pet scheme of his own, whereby the trust would ship half of its eastbound traffic over the Pennsy and split the remainder between the

MARKER brackets aren't very common on oil cars. Photo by Preston George shows Santa Fe tanker 99921

LEAKAGES of more than thirty drops a minute should be stopped at once, the AAR warns. Paul Hendricks made this shot at Pasadena, Calif., in the summer of 1925

Erie and the Central. At the same time, freight rates were advanced. The three rival roads accepted the terms, as did Standard Oil. For some reason the Baltimore & Ohio was not in on this, although the B&O was cutting its rates westbound to the Mississippi River and increasing the speed of its trains, with the idea of capturing a large slice of oil business.

By one bold stroke Tom Scott had virtually put an end to oil rate wars, although he did not stop the rebate system. Figures dug up by a Congressional investigation revealed that for the short period between October 11th, 1878, and March 31st, 1879—about five and a half months—the four big railroad systems paid Standard Oil a total of more than ten million dollars in rebates!

Rebates continued to flourish even after 1887, when Congress passed the Interstate Commerce Act, which prohibited them. At length, the stronger Elkins Act of 1903, effectively enforced by President Theodore Roosevelt, put an end to this practice.

In 1874 the first oil trunk line was completed from the Oil Regions to Pittsburgh, a distance of 60 miles. This was four-inch pipe with a capacity of 7500 barrels daily. Then the railroads awoke to the unpleasant realization that pipe lines were serious rivals, and tried to hamper their operation in every way, just as the teamsters had done a few years before. We'll go into this fight later.

Meanwhile, John D. was making seven-league-boot strides in the oil industry, pitting the various railroads against each other and buying up pipe lines right and left. By 1876 he held about 50 per cent of the existing pipe lines. An obstacle in his machine-like march was the Empire Transportation Co., controlled by the Pennsy and headed by Colonel Potts. The Empire began laying pipe lines of its own.

Rockefeller accepted the challenge. With the aid of lower freight rates exacted from the New York Central and Erie, he invaded every market where Potts shipped refined oil, and slashed prices. The Pennsy retaliated with a ruinous rate war. They cut prices. They built huge refineries and marshalled their forces of tank cars, wharf facilities, ships and barges. Independent refiners rallied

FILLING an Espee locomotive fuel tank at Eugene, Ore.: the hostler's helper is Mabel Anderson. (Below) Santa Fe hot-shot speeding eastward

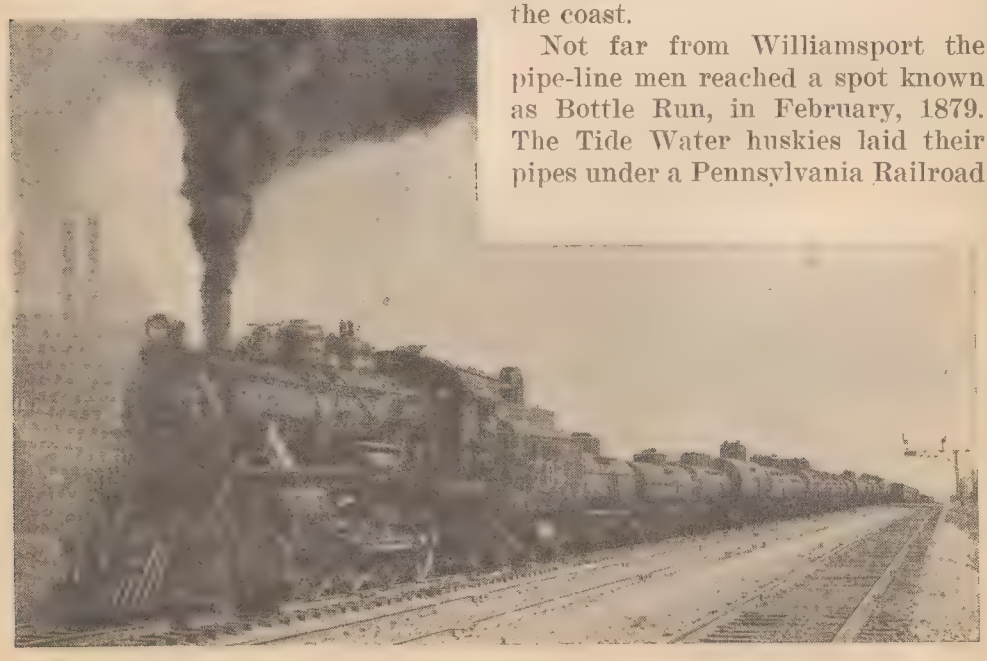
around them in a vain effort to halt the "Octopus."

What might have happened if the railroad strike of 1877 had not intervened will never be known. The strike raged with violence throughout the East. In order to free its hand for dealing with this upheaval, the Pennsy sold its Empire Transportation Co. to John D. at his terms, thus giving him control of all pipe lines then operating.

In 1878, however, a new pipe line was laid from Bradford, Pa., to Buffalo, N. Y., from which petroleum was towed to New York City over the Erie Canal. Rockefeller promptly called upon the railroad systems to protect him from competition, and they again lowered his freight rates.

Then the Philadelphia & Reading Railway entered the picture. This road contracted to carry oil for the Tide Water Pipe Line Co. from Williamsport, Pa., to Philadelphia and New York City until Tide Water could complete an eight-inch line it was building from the Oil Fields to the coast.

Not far from Williamsport the pipe-line men reached a spot known as Bottle Run, in February, 1879. The Tide Water huskies laid their pipes under a Pennsylvania Railroad

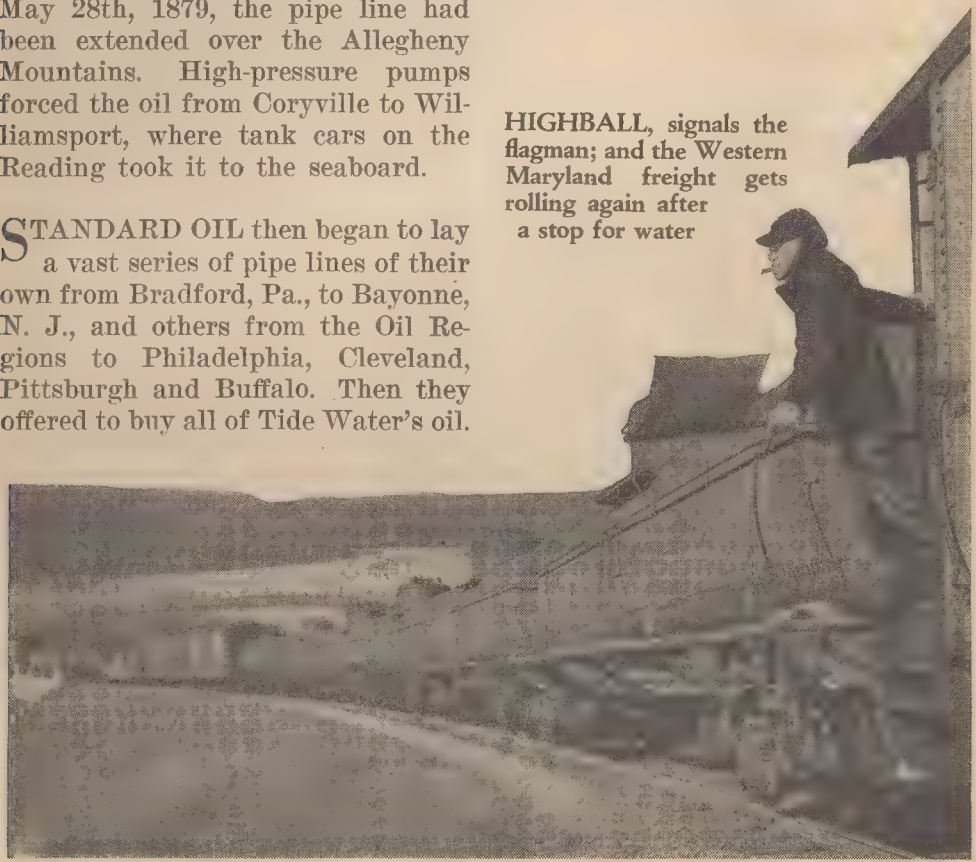


trestle at this point. The Pennsy fought back. On the last night of the month a Pennsy wrecking train was sent to Bottle Run, a gang of laborers leaped out in the darkness and looped huge chains around the line. The other end was firmly attached to a diamond-stack locomotive. Just before dawn the rigging was completed, the engineer widened his throttle. Sparks shot from the stack, wheels slipped, the clanging chain tightened. With a final spasmodic jerk the pipe line broke. A section of it was dragged away. The Pennsylvania Railroad had won the Battle of Bottle Run.

But the victory was short-lived. Tide Water secured a court injunction. Two weeks later the pipe was back in place under the culvert. On May 28th, 1879, the pipe line had been extended over the Allegheny Mountains. High-pressure pumps forced the oil from Coryville to Williamsport, where tank cars on the Reading took it to the seaboard.

STANDARD OIL then began to lay a vast series of pipe lines of their own from Bradford, Pa., to Bayonne, N. J., and others from the Oil Regions to Philadelphia, Cleveland, Pittsburgh and Buffalo. Then they offered to buy all of Tide Water's oil. Tide Water refused. Standard's next move was to compel the rival to erect its own refineries. Finally John D. purchased a large block of Tide Water stock and signed a deal which gave him the lion's share of its oil. By the end of 1883 he controlled about 3000 miles of pipe lines.

The Pennsy made a noble effort to encourage independent refineries. Rockefeller blocked this with a contract, in 1884, whereby he would carry virtually all of the Pennsy's eastbound oil shipments himself, via Standard Oil pipe lines, he collecting from the shippers and paying the railroad a 5 per cent rebate for keeping its hands off the business. Thus we see that John D. had actually grown powerful enough to *pay* rebates as well as receive them.



HIGHBALL, signals the flagman; and the Western Maryland freight gets rolling again after a stop for water

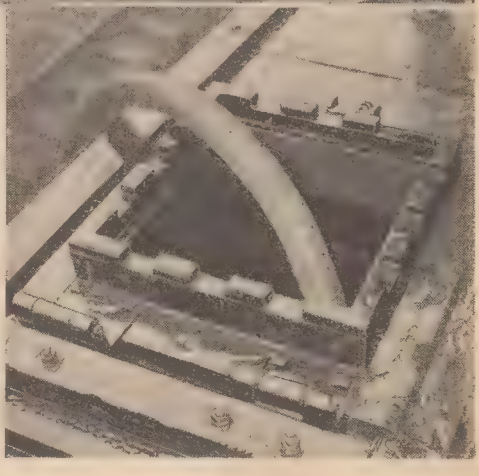
Rockefeller went from one pipeline victory to another, taking the Central Railroad of New Jersey in his stride as he had taken the other roads.

Independent refiners and producers formed a company to ship its oil over a pipe-rail-water route that included the New York, Ontario & Western. The NYO&W was glad enough to haul a share of liquid gold, but the catch came when the new pipe line was to be joined under the Erie tracks at Hancock, N. Y., its eastern terminus. A gang of seventy-five armed Erie railroaders forcibly prevented this junction. For three months the pipe-layers were encamped on the spot, but never succeeded in joining the pipes. The route had to be changed in 1893, connecting with the Jersey Central instead of the NYO&W.

Then came another battle. Builders of the new pipe line managed to tunnel under Pennsy tracks without too much difficulty, but when they tried to lay pipes seventeen feet deep under the Lackawanna Railroad the latter tore them up. The pipe-line men, fifty stalwarts, then stealthily laid a pipe under a DL&W culvert. They protected the pipe with rocks and heavy timber, camped on both sides of the culvert, and fought off the attacks of the railroaders who tried to dispossess them.

OIL DRUMS shipped in boxcars are handled by railettes at LIRR terminal yards

Both parties appealed to the courts. Before a settlement could be reached, two locomotives ran across the bridge, their crews showering the pipeline camp with hot water and burning coals. This aroused local citizens. A chapter of the Grand Army of the Republic supplied forty-eight muskets, the pipe-liners acquired eighteen rifles, and the camp was barricaded for seven months until the court reached a decision. The Lackawanna won; the pipe line at that point had to be torn up.

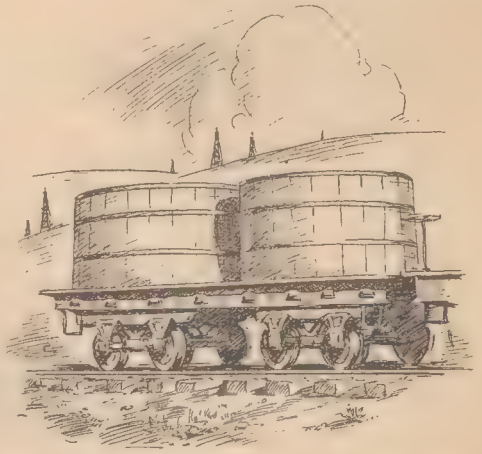


TIMKEN contributed its services in the tank-car crisis by converting a number of gondolas into petroleum carriers. These cars have inboard roller bearings. They are divided into compartments and are leak-proofed

This was one of the very few victories a railroad won over a pipe-line company. Even at that, the same pipe line was ultimately completed through the State of Pennsylvania to Marcus Hook, on the Delaware; and in 1901, for the first time, refined oil was piped directly from the Oil Regions to Philadelphia.

When the railroads began to haul oil they used flatcars and boxcars, loading from forty to sixty barrels onto each. In those days the barrel-makers had not learned to prevent leakage, so petroleum was a messy shipment. It is estimated that more than ten million barrels of oil were hauled in this manner. Just when the first tank car was built is a matter of conjecture. Records late in 1862 showed that oil was to be conveyed in iron tank cars over the Grand Trunk Railway from oil springs in Canada to Portland, Maine, where it would be loaded on boats destined for Liverpool.

We know also that an iron car of 80 barrels capacity was exhibited at Pittsburgh in October, 1865. It measured 23 feet long by 8 feet wide and was shaped somewhat like a boxcar with a rounded bottom. Earlier that year a man named Amos Densmore had invented and built a flatcar carrying two enormous wooden tanks.



GRAND-DADDY of the modern tank car was invented in 1865

THE rule that tankers must be at least 5 cars away from engine and caboose does not apply to solid oil trains

Densmore's tanker was first tried out on the Oil Creek Railroad, the A&GW and the Erie. It was said to be succsesful.

Bulk shipment of oil saved the shippers the cost of barrels, varying from $1.50 to $3.50 apiece, and was profitable to the railroads in that it cut handling charges and allowed locomotives to haul considerably more tonnage. So the tank car gradually came into common use. Demands for kerosene grew so rapidly that tank cars could not be supplied fast enough by the railroads, and the petroleum industry began equipping itself with tank cars of its own.

IN EARLY DAYS the quality of petroleum varied so widely that when a man lighted a lamp he was not sure what would happen; it might burn, smoke or explode. The first great oil fire known to history occurred at Titusville, Pa., in 1861, when ten persons perished. For decades the threat of fire hung like a sword of Damocles over the oil settlements. And, of course, there was much hazard in this kind of freight. The earliest recorded tank-car wreck occurred in February, 1868, on the Allegheny Valley Railroad and involved both of the primitive types of equipment we have just mentioned.

One of the most spectacular disas-

ters in railroad history occurred February 6th, 1861, when the *Pacific Express,* a passenger train of the New York Central & Hudson River Railroad, plowed into a freight train near New Hamburg, N.Y. Some of the freight cars were flats loaded with huge wooden tanks of crude petroleum, two vats on each car. An axle on one of these had snapped as the freight was crossing Wappinger Creek, throwing the car violently onto the adjoining track. With a roar the express hit the derailed car. The oil, gushing over the engine, was ignited by glowing coals in the ashpan.

An explosion followed. Flames shot a hundred feet skyward, spreading to the rest of both trains and igniting the wooden trestle, which collapsed and dropped the flaming cars into the icy water. Twenty-six persons were killed.

Oil shipment wrecks, during the present national crisis, have been singularly few. An open-switch accident occurred on the Illinois Central just outside Chicago a few months ago. One freight crashed into an oil train, the first car of which toppled into the path of a third freight. Quick work by trainmen saved all but six cars of the half-mile tank train. Even so, 60,000 gallons of precious war fuel went up in smoke.

And in a somewhat similar wreck, a hotshot freight collided with an oil train and thousands of gallons of gasoline and fuel oil were spilled into Chartiers Creek near Pittsburgh, Pa., on the Pennsy's Panhandle division.

Over a period of years other instances of oil-car wrecks, fires and explosions could be cited, but we'll stop with an unusual case on the Rock Island seven years ago. Seven tank cars burst, igniting the oil and threatening to burn the town of Willard, Kan. Local fire-fighters saved the day by using a machine-gun to puncture the eighth car, permitting its gasoline to run out harmlessly without exploding.

CONSIDERING the enormous volume of oil traffic handled by rail, however, the total loss through accidents of one kind or another is insignificant. Hazardous commodities in transit are guarded by strict regulations. The need for such precautions was brought home humorously in an

FUEL for Allied flyers: 100-octane aviation gasoline is being loaded into tank cars at a Standard Oil (N. J.) refinery

epitaph which some anonymous poet chalked on the side of a tank car:

> Here lies the body of Careless Hank
> Who lost regard for a leaky tank,
> "Keep all lights and fires away"—
> That is what the placards say;
> He struck a match, and—let us pray!

Some delay is caused in the wartime rail shipment of oil to the East through the necessity of setting out tank cars with mechanical defects. One road shopped 4262 cars in a single month, according to the AAR Mechanical Division, the defects being classified as follows: Trucks (other than wheels), 1382 cars; wheels, 1242 cars; couplers, draft gears and attachments, 596 cars; airbrakes, 430 cars; miscellaneous, 612 cars. "Such cars can't move oil," *Railway Age* commented tersely.

The obvious remedy for this condition is closer inspection of cars prior to loading, and the making of repairs as promptly as possible. The AAR Mechanical Division has taken prompt steps to: (1) improve the mechanical condition of tank cars, (2) emphasize the necessity of careful inspection before loading and after unloading, (3) speed up the delivery of necessary repair materials, and (4) utilize substitute repair parts and welding where practicable.

Time losses through repairing defective tank cars or transferring the cargo to other cars must be kept at a minimum. On the other hand, the cars cannot be allowed to leak dan-

ABOVE: Even electric locomotives use oil. Aside from lubrication, passenger motors like the Pennsy's GG-1s have oil heaters to generate steam for car heating

gerously. In bygone days when railroads carried a larger percentage of the nation's oil, entire communities were damaged due to improper handling of tank cars which developed defects. More than once, gasoline dripping from tank cars found its way into city sewers, later to cause volcanic eruptions in the streets.

BELOW: Diesel hogs will haul 175 times the volume of oil required to operate them between St. Louis and New York

Many railroaders, now handling tank cars for the first time, are liable to let cars with leaks proceed, thinking the seepage is not bad enough to be dangerous, while other men might cut out cars and remove their contents when the leaks really aren't serious. To clarify the matter, the AAR Mechanical Division suggests that all cars with cracks which leak more than thirty drops of gasoline a minute should be given temporary repairs, if possible. If the leak can't be checked by rubbing yellow laundry soap in it or driving a chip of wood in the hole, then contents of the car should be transferred. On the other hand, tank cars with slight leaks yielding less than thirty drops

LOADED tankers for the oil-starved East roll out of Missouri Pacific yards in Dupo, Ill., at the rate of five and a half trains a day on fast schedule

a minute from each aperture should be allowed to proceed to their destination without attention.

Detailed instructions on the handling of leaky cars are outlined in a letter issued to the AAR members and private tank-car owners.

In addition to inspection by railroad men, tank cars in transit are checked by "car punchers"—a new job in the oil industry, brought about by wartime demands for speed. These fellows are sent out on their own by Cities Service and other oil companies to watch rail movements, make suggestions for expediting them still further, and see that tank-car breakdowns are quickly fixed.

Until recently, a crippled car belonging to a tank-car company could not be repaired by a railroad if the cost of the work exceeded fifty dollars. This naturally delayed the car's return to service, so the tank-car people have agreed to let the railroads repair their cars provided the job doesn't go over $250.

THE AAR Car Service Division, whose chairman is Waren C. Kendall, took the following steps to speed up tank-car movements:

(1) Solid trains of loads and empties move speedily on main tracks through yards and terminals.

(2) Block billing of empties from unloading points in large groups rather than billing cars out individually—the result, considerable switching time saved.

(3) The same blocking plan for distributing empties at the larger loading points.

(4) Substitution of direct for circuitous routes.

(5) Concentration of crude-oil movement to eastern ports on one route to each point rather than dividing tonnage over two, three, or even four, routes. This permits trainload handling of loads and empties.

(6) Sunday and holiday switching and train service to meet expanded activities of the oil industry.

(7) Construction of new tracks and facilities by the railroads to meet increased demands at loading and unloading points.

(8) Close supervision by carriers of principal movements, especially of crude oil in trainload lots.

(9) Substitution by oil companies of tank trucks for tank cars on crosstown or short-haul trips.

(10) Assignment by private line

RIVAL forms of transportation unite in war effort. The iron horse helps to lay the world's largest pipe line. Each car in this 10-car train carries sixteen 40-foot sections of steel pipe for the "Big Inch" (see page 45). The United States has more than 120,000 miles of oil lines, as compared with about 420,000 miles of railroad trackage

car owners of mechanical men at principal loading and unloading points for making repairs—time saver permits uninterrupted loading.

(11) Shippers and receivers load and unload as fast as possible, working seven days a week, and don't hold cars over hours.

(12) Checks by field men at principal gateways and terminals for speedy railroad handling.

(13) Checks by field men for de-

tention at shipping and receiving points.

(14) Supervision of these matters by car efficiency committees of shippers' advisory boards.

"Since the first of August, 1942," Mr. Kendall points out, "tank cars have been moving in solid blocks and in special trains. Each day, about sixty of these trains, with an average close to sixty cars each, leave the oil-producing fields bound for the Atlantic seaboard. Each day, too, a similar number of trains made up of empty cars start from the East with another load. The trip in both directions is made on fast schedules, which substantially cut the running time."

Last January, for instance, 169 petroleum trains rolled over the Texarkana-Dupo route, chief oil artery of the Missouri Pacific, with shipments for the oil-hungry East. Each train was on a 34-hour schedule but took only 30 hours and 55 minutes of actual running time. Since then the MoP has been bettering its January performance on Texarkana-Dupo and other lines; and, says R. C. White, Chief Operating Officer, "We aren't through yet."

NO LONGER do you see along the MoP the once familiar sight of an oil-burning locomotive taking fuel from a tank car. This practice passed out recently as a war casualty. Today no railroad can spare tank cars for storage use; so the MoP, in common with other oil-burning carriers, has erected immobile storage facilities at fueling points. Eight-thousand-gallon oil tanks from old tank cars have been placed at some points, and concrete-lined ponds at others.

Last August the Baltimore & Ohio set a record by starting to dispatch solid trains of tank cars—some of the heaviest single through rail shipments in history—from Chicago to a distribution point at Twin Oaks, Pa., near Philadelphia. These trains, averaging 5300 gross tons, are hauled by 5400 h.p. Diesel engines. Never before had a Diesel road freight locomotive been operated in regular service on any road in the East. Five stops are made enroute for the usual crew changes and inspections, but only two refuelings are necessary in the 911-mile run. A Diesel on one of these heavy-tonnage runs hauls about 175 times the volume of oil she burns as fuel.

These all-tanker trains are shot right through, with no setouts or pickups enroute except when "bad order" cars have to be cut out. Even passenger trains go "in the hole" for such oil hotshots. Only perishables and troop trains are superior to them in wartime operation. According to Mr. Kendall of the AAR, oil traffic is watched as closely as troop movements.

"Telegraphed reports on the progress of oil trains are constantly being received by our Tank Car Section in Washington, D. C., from all the railroads handling these movements," he says. "About six hundred such reports come in every day. The charts kept by this section are like those to be found in the office of the Military Transportation of the AAR, which deals with the rail movements of troops and military freight."

If the reports should show a delay, AAR car service men get on the job at once to break the jam. Empties are not given time to cool their heels. The AAR has taken upon itself the task of seeing that they are turned around and sent back to the oil wells.

There is no longer a conflict between tank cars, tank ships and pipe

lines. All are pulling together to beat the Axis. Oil men say that it costs at least five times as much to ship crude oil by rail as by pipe line or ocean carrier.

Pipe-line history may never again record a period like 1942-'3. The pipe mileage is increasing rapidly under wartime pressure. The world's largest pipe line, known as the "Big Inch," 24 inches in diameter, is nearing completion. It extends 1400 miles from Longview, Texas, across eight states, beneath twenty rivers and over the Appalachian Mountains, to the Philadelphia and New York refineries. There are 25 pumping stations enroute, to move oil at the rate of 300,000 barrels a day. The first through shipment is expected to take fourteen days for the 1400-mile journey. This is an average of 100 miles a day. Railroad tank cars, however, make about 220 miles a day for round trips between the Southwest and the New York area.

Besides the Big Inch, more than 1500 miles of additional pipe lines are under construction or planned. All of this new development is helping to win the war. What it will do to tank-car traffic afterward is something that no railroad man likes to think about.

"Right now," to quote J. R. Coulter, Chief Traffic Officer of the Frisco, "the railroads are handling oil across the continent faster than they used to move perishable California grapefruit."

Oil for the democratic way of life is rolling eastward by rail at the unprecedented rate of more than 900,000 barrels a day!

I've found a blade that's just the thing
For fast, smooth shaves—no smart or sting!
These Thin Gillettes last long as well—
You save real dough, your face looks swell!
Produced By The Maker Of The Famous Gillette Blue Blade
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BLADES
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Easy Way To Get Even More Shaves With Every Gillette Blade
1. WASH FACE thoroughly with hot water and soap to soften beard and eliminate accumulated grit that dulls shaving edges
2. APPLY LATHER or Brushless Shaving Cream while face is wet. If lather is used, dip your brush in water frequently
3. TWO EDGES double blade life. Marks indicated above identify edges, enabling you to give both equal use and get extra shaves
4. CLEAN BLADE in razor by loosening handle, then rinsing in hot water and shaking. Wiping the blade is likely to damage the edges

Fogbound

Miles of Sleepless Watching as Jim Moran Wheels the Hotshot by Sound

By JOHN JOHNS

Conductor, New York Central Railroad

FOG filled even the cab. Jim Moran, his hand on the throttle, bounced and swayed on the hard seat with the pitch of the rough-riding locomotive. Jim was twenty-four. Tall, broad-shouldered and slim-waisted he was. Ordinarily a twinkle lurked in the Irish blue eyes, but tonight over-fatigue had robbed them of brightness. His lean handsome face and black hair were powdered with coal dust and he leaned heavily on the window arm-rest to keep his tired body from slumping into a heap.

The pounding Mogul, number 1226 on the Chicago & Western roster, was pulling more than her high tonnage rating. At frequent intervals the low drivers lost their grip on the slippery rails and raced wildly. All that November day in 1900 the weather had been cold and freezing. Ice was everywhere. But with nightfall the temperature had risen. A warm south wind had sprung up, and fog was now billowing across the rails like a sticky curtain. . .

SHORTLY before six that evening the crew had pulled into Chicago. The head brakeman, Bart Sanford, a thin,

pasty-faced youth, was cutting off the Mogul to send her to the roundhouse, while the men were congratulating themselves that a long weary trip was over, when trouble loomed up in the person of "Fatty" Bagley, the pompous general yardmaster.

Fatty came out of his office, called a stop signal to Jim. Then paddled over to the engineer and said:

"Just the man I'm lookin' for! I want you to coal and water the mill, turn around, and head back to Clayton."

Clayton was their home terminal, a hundred and forty miles distant. Jim asked wearily:

"Giving us a caboose hop, eh?"

The G.Y.M. forced a laugh. "Where'd you get that idea, Moran? If I let you fellows grab your crummy and beat it, who'd move all the cars that keep rollin' in here and pluggin' up the yard? Fact is," he added confidentially, "I've got a nice train lined up for you."

"Like hell you have!" Jim flared up. "Well, this time you're calling another crew. We're already twenty-two hours on duty."

It was a tense moment.

"Yes, I know," Bagley soothed. "You boys are all in. You had a tough trip and you ain't seen the family for two days." He dusted imaginary ashes off his vest. "But freight can't lay around, and there's no other crew—"

"At least give us a few hours' rest," urged the conductor, Bob Nevins. Bob was a short, heavy-set man with a round, bloated face.

"A few hours' rest, eh?" Bagley snorted. "Why, I'm doin' better'n that. I'm givin' you a merchandise hotshot. You fellows should burn up the road and be at Clayton and in your own beds by midnight."

"I've heard that one before," said Nevins, his nerves near the breaking point, "and it don't go."

"What did you fellows hire out for?" growled the official. "To work or to loaf?"

"We don't mind work," Jim protested,

"but every man of us is worn out for lack of sleep. "We're in no condition to take a train to Clayton or anywhere else. Suppose we doze off and something happens? I can hardly keep my eyes open now. How the hell do you think I'm gonna stay awake six hours more?"

Bagley's patience was wearing thin. "Men who can't railroad have no business on the C&W. If I report you sleepin' beauties to the Superintendent of the Chicago Division, know what he'd say?"

Silence was the only answer.

"Mitchell would say," the plump official continued, " 'Give 'em their time and let 'em go home and sleep all they want to.' I can just hear him. But I don't want any man to lose his job—"

Nevins cut in: "I don't see you working thirty or forty hours at a stretch yourself."

"I haven't time to chew the rag," Bagley said irritably. "Either you fellows run this train or you don't work at all. It's up to you."

Bart Sandford tugged at Jim's sleeve. The engineer moved a few paces away and leaned his head toward the brakeman.

"There's no use arguing," Bart pointed out. "Bagley's got us licked. He can pull us out of service for refusing duty. Mitchell is a tough Super. He'd fire us. Jim, you got a helluva lot more to lose than me. I'm only a brakeman. Get me, pal? I'm willing to go. What do you say?"

THE engineer thought a moment. He was a new runner, set up but a few months. He knew that Bart Sanford spoke the truth. Why should he throw up his seniority for a little shut-eye?

"You're right, kid," he said at length. "But what about the brains? Will Nevins go along with us?"

"I'll get his ear," the brakeman promised. "He'll see there's no choice in the matter."

The engineer and Bart returned to the scene. They found the G.Y.M. and the conductor in a hot dispute. The brakeman beckoned Nevins to one side. Jim watched them out of eyes red with exhaustion. He saw the skipper gesticulate and Bart grab him by an arm. In a few minutes both men came back.

"All right, Fatty, you win," Nevins conceded. His tone was resentful. "Bring on your damn train."

Bagley smiled. "That's fine! I thought you'd see it my way. You know, there's nothin' personal in me turnin' you boys around. I got orders to move the freight, that's all. Now, while the engine is cleanin' her fire and gettin' coal I'll put the caboose on the rear end so you'll be ready to highball."

The crew listened sullenly.

"Another thing," he went on, "I got all the air cars ahead. There must be fifteen cars equipped with airbrakes and I put 'em all together on the head end. All the non-air cars are on the rear. How's that? Now, Nevins, you and your boys won't have to get out and tie 'em down with clubs every time Moran wants to stop."

"Well, that's something," agreed the conductor. "But it doesn't change the picture. We're still in no condition—"

"Yes, yes, I know," the G.Y.M. bawled. "Are we goin' to start that all over again?"

"I said I was taking the train, didn't I?" Nevins replied tartly. "But let me tell you, some day there's gonna be a law against working men all day and all night without rest. You wait and see."

The general yardmaster laughed. "Oh, sure! Run a railroad with men spendin' most of their time in bed!"

Nevins glared. "I'm wasting words. I should know that you didn't get that big belly of yours from hard work. Come on, give me the bills for the train and we'll get out of town before I begin figuring my job isn't worth what I'm going to do."

Fatty shrugged his shoulders and followed Nevins into the yard office, as Bart climbed into the cab. The sodden engineer ran his Mogul over to the roundhouse. Then he turned her around, stopped at the coal chute and loaded up with fuel.

Fog gradually spread its dank fingers over the yard. It was pressing down on

shadowy lines of reefers and coaches, on dim lights, on dull wet rails, and on human wraiths that took form out of nowhere and vanished into oblivion.

It was eight o'clock when Jim Moran whistled off. The fast merchandise, loaded above the Mogul's tonnage rating, rumbled out of Chicago thirty minutes ahead of *The Owl* express.

AND now, an hour later, with fog still swirling around like gray smoke, Jim peered out the cab window, leaning heavily on the arm-rest. His eyes burned. If only he could close them! But he dared not take his gaze from the murk into which he was plunging his crew, his train and himself.

He knew the dispatcher had confidence enough in him to let the redball freight step right along. Without a stop they covered the seventy miles to Desmond. The towerman at that point switched them onto a siding so the passenger train, also westbound, could thunder on down the main and pass them.

As Jim eased his engine onto the sidetrack, Bart crossed the cab and said:

"You did a swell job, Moran! Dispatcher gave us a nice shot here to Desmond. It's only ten-thirty, and we're halfway to Clayton."

"If we do the next seventy miles in just as good time," chimed in the fireman, who was a boomer, "we'll get home just after midnight. Is this your regular mill?"

"Sure is," the engineer answered proudly. "She was in bum shape when they first gave her to me. But I got kind of chummy with the day roundhouse foreman in Clayton. McGinnis is a great guy. He had the boys fix her up some, and I finished the old girl on my own time."

"She's a good steamer," said Bart.

"And the valves are set right," Jim added. "There isn't a blow out of her. She rides hard, though, and pounds like the devil, but she can pull 'way over her rating. Did you see how she walked right away with the heavy train we have tonight?"

"She did that," the fireman agreed, and lapsed into silence. Then he said, after the manner of boomers:

"I'm dead on my feet, Moran, but not because of this trip. I figured on the hay when we got to Chi. Turning us around without any rest has sorta floored me. But don't worry! I'll stick it out till we reach Clayton. Why, once on the Lake Shore I was fifty-five hours—"

"Here comes *The Owl,*" Bart interrupted. "Gosh, the varnish was right on our tail!"

The freight coasted down the siding. Jim squinted out his window, watching for the dwarf signal that governed movement onto the main. He could barely distinguish landmarks. When he caught a fleeting glimpse of a toolhouse he knew the distance to the switch and signal. Alert, tense, the engineer peered ahead. His tired eyes picked out what seemed to be a pin-point of green light. He waited, sighed with relief. The pin-point of green was the signal glow of the dwarf.

Don't Blame the News Dealer

If your copy of *Railroad Magazine* arrives late, remember that wartime freight is often delayed. Magazines are not given priority. We print on time, but cannot guarantee prompt deliveries "for the duration."

Jim slowly notched the throttle. "We got the bug to go," he called over his shoulder to Bart and the fireman. "Clayton next!"

He rolled the Mogul out onto the main. As they passed the signal tower, the towerman opened a window and, with his lantern, twirled a highball. The engineer answered with two short blasts of the whistle.

"There's nothing behind you but Number One," the brakeman shouted across the cab. "We've got an hour on her. No reason why we can't go to Clayton for her."

Jim nodded and widened on the throttle. The old girl shot sparks into the sky and jerked ahead, straining herself to get the heavy freight rolling. Bart scrambled back into the tender. He shoveled coal forward, within the fireman's reach, so the boomer would not have to dig for it.

JIM watched and waited for the first block signal, the silent sentinel that stood guard over train movements. Somewhere down that gloom-shrouded stretch of main stem a passenger train, *The Owl,* was speeding to keep a schedule. *The Owl,* Jim reasoned, should be miles ahead of them by now. But any one of a dozen mishaps could have stopped it, holding the train at a standstill out there in the gray night.

The gleaming semaphore light, dimmed by the mist, could be seen by the engineer only when he was leaning from his cab window. Even then it was visible for but a split-second as it flashed by. To miss a signal under such conditions was easy, and was comparable to a ship captain losing his bearings in a fog.

There was a faint glow, but Jim caught it. White, clear! *The Owl* was obviously some distance ahead. How far, he had no way of knowing. But of one thing he was reasonably sure: the track ahead was clear for a few blocks. Even so, the engineer was alert, ready for a rear end to loom up out of the mist. Automatic block systems in those days were subject to signal failures. The worst that could happen was for the signal arm to remain at clear instead of rising to a horizontal stop position.

Bart Sanford stepped over to the side of the engineer and shook his head. "Gee! What a fog!"

Jim again pulled out the throttle another notch. "I'm running blind," he confessed. "I barely caught that last signal. The bug was clear. I can't see a thing. I'm guessing half the time where we are."

The brakeman gasped: "You mean—you ain't always sure where we are?"

"Are you?" the engineer countered.

"Why, no," said Bart. "I'm depending on you. But if *you* don't know where we are all the time—Hey, can't you even pick out some of the landmarks? You know, like the white house at Belmore?"

"Don't get excited," Jim advised coolly. "I'm running on signal indication, and sounds. I have a pretty good ear. I can tell when we're passing certain things. We'll be passing that big rock just before we come to Willowtown. Stick here and I'll show you what I mean."

The brakeman remained standing behind the engineer, tense and wide-eyed as if he expected something to happen. The freight was rolling rapidly. When it had covered a distance of three miles, Jim heard a roar from the left hand side.

"There! That's it!" he cried. "The big rock—it's echoing the noise of our passing. Wait! We'll soon be going through Willowtown. You'll be able to see the depot."

Two minutes later the engineer directed Bart's attention to a building swathed by the dank fog.

"There's the depot," he pointed out.

"We're passing Willowtown. Next we'll get the rumble of crossing the bridge at Swan River. Then, when you feel us on a long curve, you'll know we're coming into Forest Bend; and when we cross another bridge we'll be passing Steuben."

"I wish to hell we were out of this fog," the brakeman said, returning to his seat on the opposite side of the cab.

RESTING a hand on the throttle, Jim Moran moved his aching body back and forth on the seatbox. Cold, damp air blew in through the open window. Billows of fog poured around him like smoke. The engineer sensed that they were coming to another block signal. He leaned out and looked for it. Presently he picked up a pinpoint of light, and saw the white glow as his cab moved under it.

Then he settled back on the seatbox. His eyes throbbed from lack of sleep. Visions of a clean, soft, white bed danced through his mind. The trip was torture, but they would soon be home in Clayton. And bad as was their discomfort, they were not in trouble. Bart was a sensible fellow, Jim reflected. Bart knew that if they had refused to obey Bagley, they'd all be out of service now, waiting to go "on the carpet," and Superintendent Mitchell undoubtedly would discharge the entire crew.

Discharged! Jim shuddered. What a close shave it had been! How could he have faced his wife? He visualized the new house on East Street in Clayton he had built for her, how he had carried his bride across its threshold. Lose his job when he had worked so hard to become an engineer? And she had helped him with the examination papers!

These thoughts made Jim even more impatient to reach the terminal. He peered anxiously into the fog, giving the throttle another notch. There was a rumble. He recognized the sound of a train on a bridge. The boomer fireman slammed the firebox door and looked up at him.

"We're crossing Swan River," Jim offered. "There's a block signal just west of here."

The freight boomed onto firm ground. Again the engineer craned his neck out the window. Presently he glimpsed the smothered glow.

"Clear block!" he cried jubilantly. "I'm going to town now. Can you stand it a while?"

"Don't worry about me," the fireman grinned. "The quicker we get in the better I'll like it."

Jim pushed the Mogul, but at the same time saved the fireman as much as he could. He got a good roll on the train and tried to find a soft spot on the hard cushion for his exhausted body. He had nothing to do but ride and catch the block signals as he thundered beneath them. Inactivity made him drowsy. Twice he caught himself as slumber was overpowering him. Miles, weary miles, miles of agony! Jim gazed out his window and let the damp air blow on his face. He was in a stupor.

The train rocked onto a long curve, the car-wheel flanges screeched; and he was on his feet again, looking for the signal. The long curve, in the fogbound night, told Jim that he was approaching Forest Bend. And there a semaphore stood a hundred feet west of the station.

Again he caught the block. A blot of white dimmed by the haze. He waited until the boomer opened the firebox to put in a fire; then he looked across the cab. Bart was leaning against the cab frame, his head down.

Jim called the fireman. "Boomer," he said, "wake up the shack for me! He's got to keep his eyes open tonight."

The fireman jeered: "Bart's all right. He ain't in my way. I'll be needing coal soon and then I'll wake—"

"I want him to watch for these blocks," the engineer explained, too tired to challenge the fireman's impudence in questioning an order from him. "I can hardly keep my eyes open. If I miss one of these signals I'd have to slow down. Maybe there won't be a chance for me to slow down."

"I get you." The fireman spoke cheerfully, now that he understood the reason for the request. At first he had been

hostile to Jim's order because he knew that some engineers prohibited brakemen from sleeping in the cab.

BEFORE waking Bart Sanford, the boomer said: "I'd be glad to take the throttle for a while, Moran, but I don't know the road. And on a soupy night like this I wouldn't know if I was on the C&W or the Indian Valley Line. Besides, if I ever hit that seatbox, I'm so tired that I'd go dead before you know it."

"Thanks," Jim responded. "Yes, I'd better stick with the old girl. Get Bart on his pins!"

The fireman crossed the deck and shook the sleeping brakeman. Bart, utterly worn out, required a lot of physical persuasion to wake up.

"What's the matter?" he yawned.

Briefly the engineer told him, speaking loudly to overcome the locomotive's roar and pound. The sleepy brakeman was in no amiable mood.

"If you can't see these signals yourself," he growled, "you need an eye test."

"Never mind the lip," Jim retorted. "I want you to answer me when I call a block. This damn fog is getting worse. If I wasn't so sleepy I wouldn't need help."

For the next few signals Jim was satisfied with the manner in which Bart repeated them to him. Then the brakeman walked the few steps to the engineer's side and said he was going back to the tender and shovel ahead some coal for the fireman.

The engineer listened for sounds that would tell him where he was. By dead reckoning he figured he was near Steuben. His eyelids felt as heavy as lead. To keep them open until the brakeman returned to the seat across the cab from him, Jim reached into his jumper pocket and brought out a package of pipe tobacco. He dug into the container with clumsy fingers and withdrew a few grains of the weed. Into the corner of each eye he placed a dab of tobacco. The sharp sting caused him to wince. He was wiping his eyes with a handkerchief, yet even as he did so he continued to watch for the blocks.

Soon the Mogul was on a bridge. A rumble, the roar of wheels on a wooden frame in the air. This was the bridge coming into Steuben! Jim was on his feet and leaning far out his window. His eyes probed the white curtain that hemmed them in. Vainly he searched for the semaphore. Why, of course, he was crazy to be looking for the block. He was only rumbling across the bridge, while the signal was located to the east, just a few feet from the place where trains rolled onto the structure.

Jim forgot his tortured vision, forgot everything except one terrible fact: he had missed a signal! In some manner he had failed to see the semaphore located to the east of the bridge. He had run a block! The realization sent him into a cold sweat. He tried to think. Time was precious.

Why, what nonsense to be so concerned! He was following *The Owl*, and the blocks had all been clear. Wait! Another signal was located less than a mile away, a few paces beyond the Steuben depot. Wait! Sure, it would be white, indicating the block was clear. But what about the previous signal, the one he had missed? Suppose it had been green, mutely informing him that the next signal would be red? In that case, the block was occupied; somewhere within its three-quarter-mile length was a train.

Yes, supposing the limited was stalled in the fog? Jim wouldn't be able to see anything until suddenly there was a crash. He withdrew from his window, nervously closed the throttle, and began to apply the air on the fifteen head cars equipped with airbrakes. Inwardly he gave thanks that the train had such braking power.

A SOUND of air escaping from the port drew the fireman's attention. The sudden shutoff, the bunching of the slack which sent the train against the Mogul, brought the brakeman scrambling down off the coal. He climbed over the coal boards, landing almost at Jim's feet.

"What's going on?" Bart and the boomer asked in chorus.

"I missed that last block," the engineer

blurted out as he worked frantically to slow their speed.

"How do you know it wasn't clear?" the fireman inquired.

"Never mind that," said Bart. "Jim, how did you come to miss it? How?"

The big fellow was bewildered. "I don't know. I was putting some tobacco in my eyes. I was watching for it."

"If you had your eyes peeled and didn't see that signal, how do you know you missed it?" the brakeman questioned. "I think you're a little mixed up. I don't believe there's a block back there at all. This fog—"

"I know the location of every signal on this division," Jim declared vehemently. "I tell you I missed that last one—"

"Why don't you wait until you come to the next one before you stop?" the fireman piped up. "You got a swell roll on this hotshot."

The engineer scowled, "Do you know the indication of that last block?"

"I didn't even see it."

"Bart, do you know what it was?" Jim asked anxiously.

The brakeman shook his head. "How the hell could I see anything? I was back in the tank pushing coal. But I don't think you missed a block. You probably dozed off a second, and imagined you passed one."

"You don't know what you're talking about." The nerve-wracked engineer raised a hamlike fist. "Say that again and I'll knock your block off. Why, you damn fool, how could I be dozing when I was putting tobacco in my eyes?"

"Sure, that's right," the fireman added. "I saw him."

"I'm sorry," Bart apologized. "But I still don't believe you passed a signal."

"I know I did," insisted Jim, now successful in slowing down the freight.

"This crazy stop is gonna cost us an hour's delay," the boomer grumbled. "And we'll lose more time getting a roll on it."

The brakeman shook his head. "And the dispatcher'll hold us at Round Robbin for Number One! More time lost, just because you got an idea—"

Bart did not finish. Two torpedoes exploded. The men ran to windows and gangway and stared ahead. Jim now had the freight under control and moving at a slow rate, as though he knew the next block was red and he was leisurely coasting up to it. Suddenly the brakeman cried: "Hey, a flagman right here!"

A ghostlike figure in trainman's uniform took shape and climbed into the cab, red and white lanterns dangling from his arm.

"Take it easy, boys!" he said. "*The Owl* is just the other side of the depot. Our rear end is only a few feet the other side of the signal. You sure made a great stop. I could hear you coming, and I figured you'd pile into us before you could get stopped."

"I got fifteen cars of air on the head end," Jim explained, his hands unsteady.

BART and the fireman were seated across the cab, their faces white. Both were unable to speak. They avoided meeting the engineer's eyes. Jim saw they looked sheepish and he knew they felt the same way.

If he hadn't been firm in his resolution to stop, after insisting he had missed a signal, the Mogul would now be buried in the debris of *The Owl*. At the speed they were going they would have split several sleeping-cars, would have plowed right up the center. Instead of the sound from the engine, the gentle hiss of steam and croon of the air pumps, the night would have been filled with the screams of the injured. Bart, the boomer fireman and himself probably would have been among the dead. They wouldn't have had half a chance. The wrecker would take two days digging into the twisted mass to get their bodies.

Jim handled the throttle gingerly. He fed steam in small amounts, pulling out the throttle a little and then gradually shutting off. He had to creep. Somewhere, a short distance ahead, a red block and a standing passenger train were hidden behind the fog curtain. Cautiously he inched toward the signal.

The flagman off *The Owl* stood in the gangway on the right-hand side, squinting into the murk for a glimpse of the block. The freight had traveled several hundred feet, when he yelled:

"Stop! You're at the signal!"

Jim had seen it, too, and was already applying the brakes. When the freight stopped, the passenger flagman started to descend from the cab. Quickly the engineer stepped down from his post, placed a restraining hand on the man's shoulder, and asked:

"Say, bud, I forgot to ask you—why did *The Owl* stop? Steuben is no regular scheduled stop."

"You got me," came the reply. "We stopped in a heap. I grabbed my lanterns and beat it back to flag."

He moved down the cab steps. Jim took a white lantern and followed. The passenger brakeman climbed onto the rear of his train, while the passenger engineer continued toward the head end.

Using the side of *The Owl* as a guide, Jim made his way to the head end, to find the train baggagemaster coupling the hoses between the baggage car and a coach. Billy Milton, *The Owl's* engineer, was holding a bunch of burning waste to illuminate the scene and in general was assisting the baggagemaster.

"Hell-o, Billy!" Jim greeted. "I expected you'd be in Clayton by now."

Milton grunted disgustedly. "Damn this fog! Sure, I'm due at Clayton now," he said, looking at his watch, "and I'm still forty miles away. First we get low steam. That teakettle of ours couldn't roast peanuts. Then a brake sticks on one of the sleeping-cars. And finally I pull loose a drawbar on the smoker trying to get out of town, after I made a grandstand stop at the depot here. And all this trouble happened after I'd passed Desmond on time."

"I know," Jim sympathized. "I was in there for you to run around me."

MILTON whistled between his teeth. "And you're up behind me already? Well, that goes to show you how much time I dropped. Say, did you notice that block signal just before you hit the bridge coming into town?"

The freight engineer was in a quandary. As he had not seen the signal he did not know what to answer. He could tell the truth, that he had missed it. Milton was known to be tight-lipped, but pride prevented Jim from making such an admission.

"You mean the signal about a hundred feet east of the bridge?" Jim hedged, hoping for an opening.

"Yeh, yeh, that's the one I mean," the passenger engineer replied, slightly annoyed. "It should have showed green for you when I stopped here. But it didn't."

"Sure, I know," Jim prompted him, holding his breath.

"But you got no indication, neither did I," *The Owl's* engineer grumbled. "The damn thing was out. Both the fireman and I were looking and we saw it all right. It was out. The arm was down. It's bad enough that the lamp was dead, but suppose it wasn't working and stayed clear."

Jim Moran twitched uneasily. The other engineer continued to speak.

"I didn't know you were so close behind me. I took a helluva chance when I stopped. You might have missed that block and plowed into me. Anyway, I made a nice mess of it by stopping. When I saw the bug was out, I slapped on the air. I figured on spotting the engine in front of the depot so I wouldn't have far to walk when I went into the telegraph office to report to the dispatcher."

Jim nodded in silence.

"Dispatcher's putting out orders to trains going west," Milton said, telling them about the bug being out. "I guess you were following so close behind me, that he did not have a chance to give you a message."

"Yes," Jim agreed. "I saw the block was out, but I could not see the position of the arm, so I decided to stop and crawl up to the next signal, stop here and report it the same as you. But since you've already told the dispatcher—"

"No need of you doing it now," said

Milton. "But, pal, you sure got a good eye. And you sure used your head."

The freight engineer edged away. "Guess I'll mosey back to my train. You'll be highballing by the time I get there."

JIM climbed shakily into his cab. Bart, his head brakeman and the boomer fireman looked at him with fixed gaze.

"I hope tonight is going to be a lesson for you fellows," he began, standing in the center of the cab. "It's only by the grace of God that we're all alive and that a score of passengers are sleeping in *The Owl* instead of being killed. A man who ignores a block signal is taking a criminal risk."

"You're right, Moran, and I'm sorry."

The boomer fireman offered a calloused hand. The engineer gripped it heartily.

"I didn't want to lose the time any more than you fellows did," said Jim. "But there's Milton with *The Owl*. He was plenty late, yet he thought enough about the lives of men on trains following him to stop and drop more time while he reported the signal light was out—"

"Out, eh?" Bart Sanford echoed. "No wonder you didn't see it."

Jim turned to the fireman.

"Boomer, I want you to say nothing about tonight. I missed that signal and it's only because I didn't want to run a block—"

"All right, I know," came the reply. "If anyone asks me, I'll say you saw the light was out and were gonna stop and report it."

"Same here," Bart chimed in. "I owe my life to your common sense. What do you say? I'm sorry, too. Shake!"

Jim took his hand and slapped him on the back. "One good turn deserves another," he quoted tritely. "If you hadn't talked with me last night about Bagley's order I'd be out of a job now."

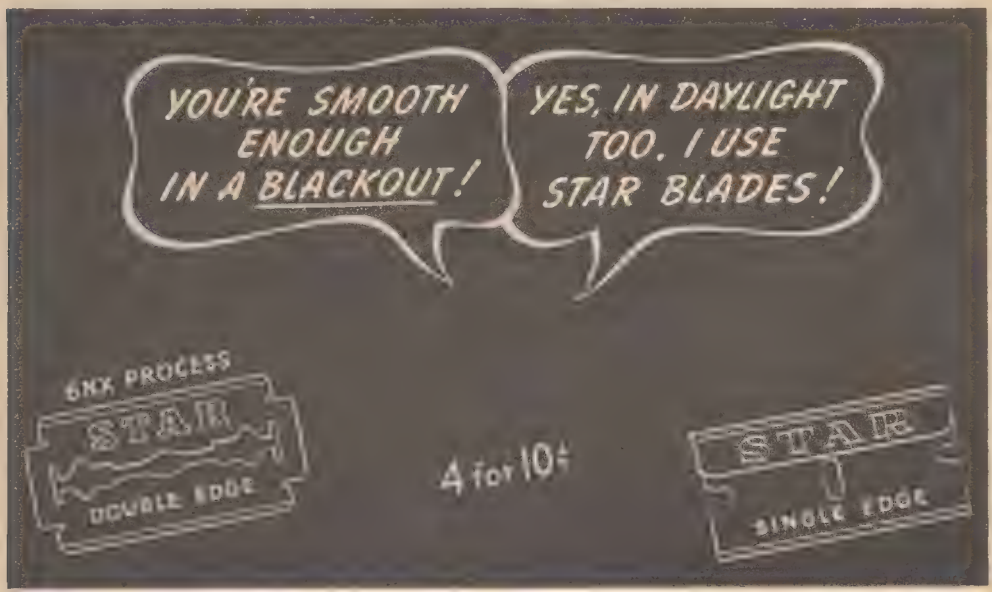
"And you saved my life," the brakeman reminded him with a tired grin.

"All right, Bart, we're even."

The brakeman shook his head. "I still think I got the best of the deal."

Meanwhile, *The Owl* was moving ahead into the fog-plastered night. Jim whistled in his flag, and followed. He ran cautiously and stopped at Round Robbin for water. Then on to Clayton, end of the run, with no further incident.

At last, at long last, the weary fogbound railroaders had come home. They had brought the freight into the terminal in one piece, there were no casualties, and every man Jack of them was ready to tumble into bed and sleep the clock around.



115 Years' Seniority

Four Generations of Millhollands Have Kept the Flanged Wheels Rolling

DOWN on the Piedmont Sub-Division of the Chesapeake & Ohio, articulated giant *1547* hammers eastward with half the State of West Virginia jouncing in her coupler grasp. Side-rods, copper plated by the setting sun, cross flaying eccentric motion at half-second intervals, and a bubbling exhaust pelts cinders, sleet-like, at the cab.

W. D. Millholland stoops to adjust a stoker valve; straightens and grins as a searchlight signal ahead winks red-to-yellow-to-green. This is steam railroading at its best, and the Millhollands have never been happy away from plumbago and steam.

It all started back in 1829, when Peter Cooper brought a crude little cylinder down from New York to Baltimore and set it, with a boiler of his own construction, on a railroad carriage hardly larger than a section car. Helping the prominent merchant and philanthropist to assemble his historic *Tom Thumb* in the old Mount Clare car house was a teen-age youngster with an unusual flair for mechanics. His name was James Millholland.

On a memorable night in the spring of 1840, James knew that he had found his trade. Peter Cooper had just fired up the boiler of the tiny locomotive and sent it chuffing slowly down the darkened shed and out into the starlight for a two-mile run along the main iron of the B&O. The railroad had acquired its first steam engine, and the industry at large, a potential locomotive designer.

At twenty-one, this youthful machinist was appointed master mechanic of the Baltimore & Susquehanna; then one of the most important railroads in the world. His work was highly successful but when, in 1848, the Philadelphia & Reading beckoned, James welcomed the opportunity for change. The P&R had been built at the staggering cost of $180,000 *per* mile. But in its tenth year it was making money. Over its 45-pound rails clattered the heaviest traffic in America. As master of machinery, it would be Millholland's job to move these shipments economically.

His lifetime approach to the problem was two-pronged. First, he undertook to develop engines that would burn the anthracite so readily available in Eastern Pennsylvania. Secondly, he wanted these locomotives to haul the heaviest payloads of their day.

HIS efforts began with radical changes in the firebox design of a Baldwin eight-wheeler, the *Warrior*. With a built-on extension that overreached the rails behind the rear set of drivers, this became the first locomotive to have a firebox width exceeding the span between the wheels. In 1857 he carried the broad grate principle still further, initiating the placement of the firebox above the frames. The engine involved was the *Vera Cruz*.

The problem of creating a locomotive of great power was aggravated, in the instance of the Philadelphia & Reading, by the sharpness of mountain curves. The young master of machinery sought to solve this problem in the construction of his first engine, the *Philadelphia*, by placing all of its weight on three pair of

close-coupled drivers. The main-rods were attached to the rear wheels and the action achieved by this arrangement was like that of an old man climbing a steep flight of stairs with his hands in his pockets. In an attempt to stabilize the lateral motion, Millholland stumbled upon an approximation of the Mogul type, save that the restraining pony wheels applied to his famous Pawnee engines trailed the cylinders, instead of leading them.

Never satisfied with the product at hand, the restless inventor went on to construct a group of ten-coupled machines and then the fabulous *Pennsylvania,* which had no less than six sets of driving wheels.

Looking over the eighteen years which James Millholland spent with the Reading, one cannot but be impressed. During that span of time, due in great part to his efforts, the locomotive passed from a crude, elemental machine to a well-balanced, fleet and practical power plant.

IT IS no secret that locomotive building is an art passed down from father to son. The Stephensons, the Norrises, and the Vauclains are proof of it. Inhabitants of Reading, Pa., were not surprised, then, when James Millholland the Second went off to join the mechanical department of the George's Creek & Cumberland Railroad. There his sound judgment in matters administrative as well as inventive raised him through positions of successively greater responsibility to the presidency of the road. When the GG&C passed into the hands of the Western Maryland in 1907, it was in excellent physical condition, thanks to his capable management.

Meanwhile another Millholland had gone railroading. J. K., son of the George's Creek & Cumberland Railroad administrator, was a shop foreman at the time the line went over to the WM. In 1918 he left the latter system to assume a similar post with the Chesapeake & Ohio at Russell, Ky.—make-up terminal for the long coal trains that rumble northward across the midriff of Ohio to Great Lake's shipping posts.

Two years later he transferred to Shelby, Ky., down in the Russell Fork country, where the coal-veined mountains are stacked three deep. A throw-back to the first James—who watched his engines battle a like succession of curves and grades? Perhaps. At any rate J. K. Millholland has spent the last twenty-three years at this isolated C&O Terminal, contributing to service improvements with advanced equipment designs.

And now we see his son, W. D., firing the Chesapeake & Ohio drags that rock the Virginia countryside between Charlottesville and Richmond. Probably no family in America has a longer service record than this house of Millholland—*one hundred and fifteen years of consecutive service on the railroad.*

WITHOUT the superheater, modern steam locomotive performance would be impossible. By raising the temperature of steam as it comes from the dry pipe, this mechanism reduces the moisture content

The resulting "dry" steam has greater volume per unit of weight than saturated steam and does more work during admission expansion on a smaller consumption by weight, per stroke

AT RIGHT: The Elesco type A Superheater

Light of the Lantern

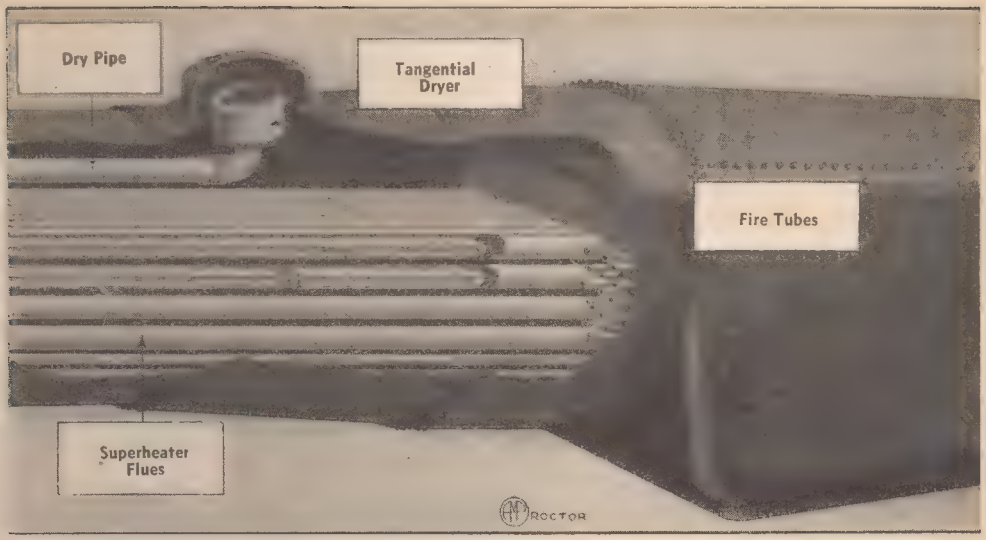
Locomotive Superheaters

EVERY schoolboy knows that water heated in a teakettle will boil at 212 degrees Fahrenheit at sea-level, where the air pressure is 14.7 pounds to the square inch. With the thinner atmosphere found at higher altitudes, however, it will start to simmer and steam away at much lower temperatures. In short, no matter how much heat is applied to the water, the temperature at which it will boil is in direct relation to the surrounding pressure. A more intense fire will do no more than increase the speed of evaporation.

Similarly, when heat is applied to water in a closed vessel, its temperature and that of the steam is in direct relation to the pressure within the container. Hence if boiler pressure stays constant, so does the heat of the liquid and vapor. For example, at 170 pounds' boiler pressure, conventionally-generated steam will always show a temperature of 375 degrees Fahrenheit, and a volume of 2.47 cubic feet per pound. Vapor having this fixed relation of temperature to boiler-pressure is known as *saturated* steam.

As its name implies, saturated steam contains a considerable amount of unevaporated water—an undesirable characteristic, for coming in contact with comparatively cool steam pipes, chests and cylinders, the vapor condenses rapidly, with losses running as high as thirty percent by volume. Thus, only about two-thirds of the original steam is left to move the pistons; a vast waste of potential horsepower.

Very early in the development of the steam engine, inventors sought a means of correcting this evil. James Watt tried to reduce condensation by applying a jacket to the cylinders. At about the same time—in 1786 to be exact—another Englishman, named Joseph Hately, obtained a patent for what was probably the first steam superheater. He reasoned, and correctly, too, that if vapor could be separated from the water used in generating it and exposed to still more heat, its temperature would be further raised and its volume increased, without a corresponding rise in boiler pressure. This is the basic principle of superheating, or the creation of "dry" steam. The difference

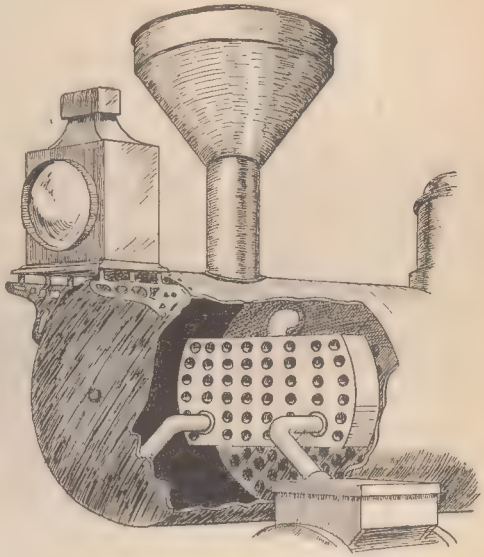


in temperature between *saturated* and *superheated* steam at the same pressure, then, is known as the degree of superheat.

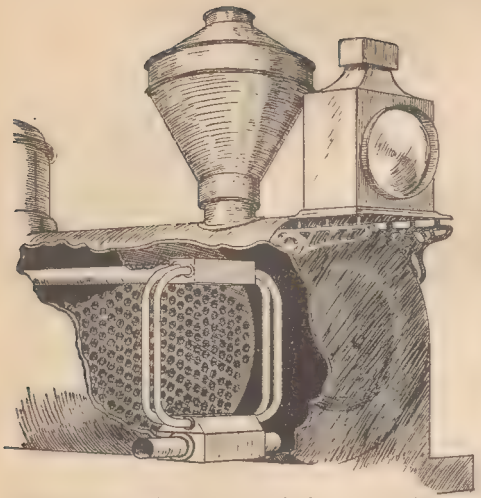
How successful Hately's invention proved itself in actual service, history does not say; we only know that it paved the way for a succession of somewhat similar mechanisms, most of which were eminently unsuccessful.

LOCOMOTIVE manufacturers, from the first, were interested in the possibilities of the superheater. More than stationary engine designers, they felt the need for compacting the greatest amount of power into a given bulk of machinery. In 1839 we find R. and W. Hawthorne, partners in the firm of Hawthorne, Leslie & Co., locomotive builders at Newcastle-on-Tyne, patenting a smokebox superheater which consisted of a steam chamber with tubes running through it for passage of the gases. It is noteworthy that this and all other engine superheaters built for many years thereafter were located not in the boiler flues, but in the area ahead of them. The reason for this failure to take advantage of the higher temperatures available in the tubes is understandable in view of the fact that cylinder lubricants had not yet been developed which would withstand the high degree of superheat created by that method.

The smokebox superheater, then, was a compromise affair and, as such, furnished only a small degree of temperature rise. Further, it obstructed the front-end and impeded the draft. We have noted that the Hawthorne design passed hot gases through a battery of tubes. The Hodge superheater type, which appeared at about the same time, ran steam through a coiled pipe exposed to the heat in the smokebox front. Subjected to the cutting action of



EARLY flue-type superheater designed for the Hudson River Railroad by A. F. Smith



MILLHOLLAND'S smokebox superheater passed gases from firetubes around coils containing saturated steam

cinders and quick corrosion, units of the latter type involved high maintenance costs, and the difficulty of keeping them clean made a uniform degree of superheat impossible. This disadvantage applied to a steam coil superheater built by James Millholland for the Philadelphia & Reading at about the same time the Hodge design was finding disfavor.

J. F. McConnell, locomotive superintendent of the London & North Western Railway, was among the first to make use of a fire tube superheater design. Following a patent taken out in 1852 for a steam chamber having horizontal fire tubes passing through it and alligned with the boiler tubes, he evolved and obtained similar legal coverage for a tube-within-a-tube arrangement which passed completely through the locomotive boiler; the inner one being a fire flue, while the concentric space around it carried the steam. Resembling one section of a present-day Elesco H-A type unit, a superheater of this pattern was actually applied to a locomotive on the L&NW. Unfortunately, we know nothing of its performance.

In 1862, M. Petiet, of the Northern Railway of France, constructed several engines having the stack carried back over the boiler and through a steam drum to the atmosphere. Since this system partially dried the steam, it could nominally be called a superheater.

HERE in the United States, inventors were not idle either. Around 1860, Henry Tyson fitted up an engine with a row of boiler tubes that curved upward into the steam space above water level. A few years later the Burlington tried out a superheater of the smokebox drum type.

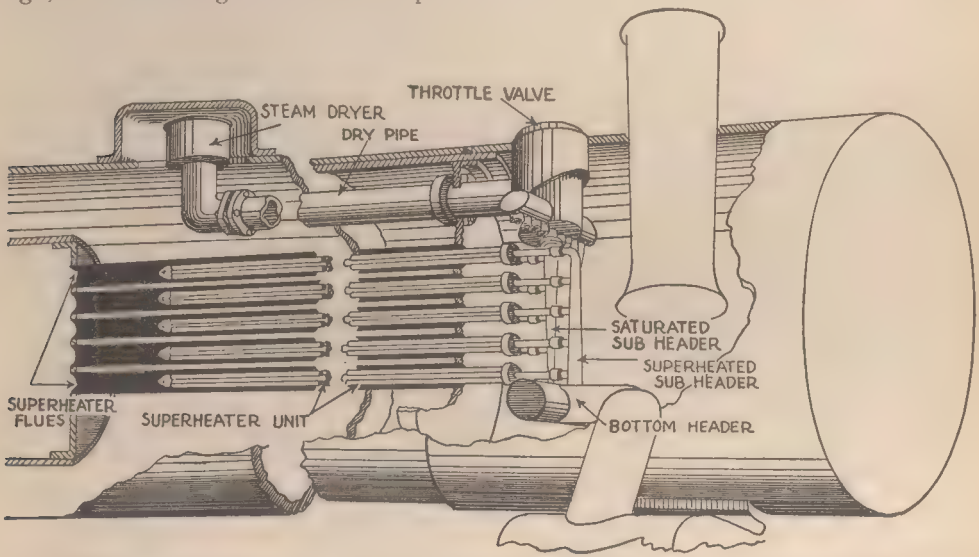
FIRST Schmidt superheater installed in an American locomotive was applied to Canadian Pacific ten-wheeler 548 in 1901. At the time of her scrapping in 1929 she bore the number 292 (Class 3c)

CP 548 had the further distinction of being the first engine on that road to use piston valves. Here's how she and sister engines looked before conversion

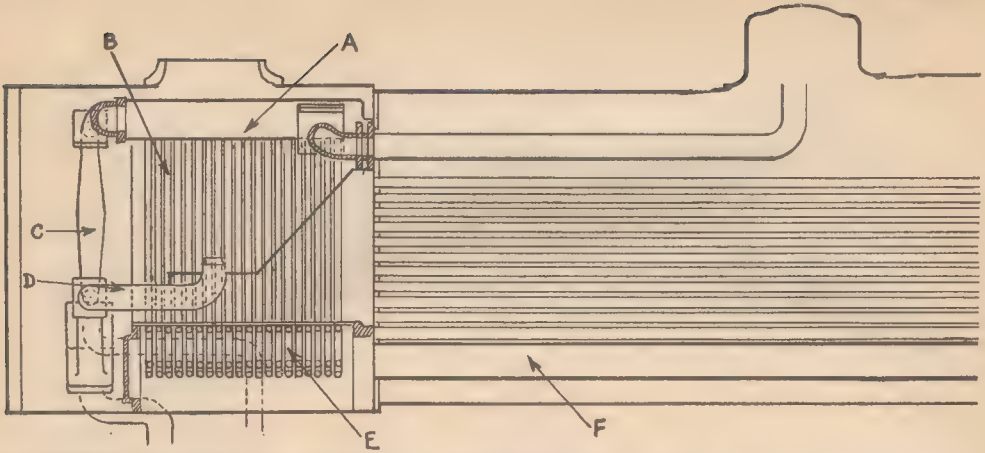
Located directly behind the front flue sheet, it was honey-combed with fire tubes and contained partitions which diverted steam through a long and tortuous path. Like all other smokebox superheaters, however, it developed an insufficient degree of temperature rise to justify its initial cost and maintenance.

Then in 1895, Doctor Wilhelm Schmidt, who might be called the father of the modern locomotive superheater, began his experiments with this device. Schmidt was convinced that superheaters would never be successful until some means was found for creating steam temperature heretofore undreamed of. He reasoned that the difficulties of valve and piston design, and the finding of a lubricant capable of withstanding high temperatures could be overcome, once a practical and efficient superheater was devised.

His first attempt was a smokebox type, but in contrast to previous models it did not depend upon waste gases to supply heat to the steam. Instead, Schmidt tapped the firebox itself to supply hot furnace gases directly to the steam. That is to say, an eleven or twelve-inch fire tube was placed between the regular tubes at the bottom of the boiler shell, extending forward to the superheater unit. The latter consisted of three concentric ring-shaped groups of one and one-quarter inch tubes, placed one behind the other. At their upper ends the tubes expanded into



COFFIN superheaters of the CS type divert steam from front-end throttle through saturated sub-header to cylinders via superheated sub-headers



SCHMIDT Smokebox Superheater. A-distributing steam header; B-superheater tubes; C-steam pipe to cylinder; D-exhaust pipe; E-superheating firebox; F-superheater flue

long steam "headers," while an open area at the bottom of the center ring formed a superheating firebox which received the hot gases passing through the large fire tube. The whole assembly was covered to the top of the exhaust nozzle, where a damper-protected opening was left. This could be closed from the cab in order to prevent burning of the superheater when the engine was drifting.

The distributing steam header connected with the dry pipe, and was situated at the top right-hand side of the smokebox. Constructed with a partition down the center, it received saturated steam from the throttle and passed it through the rear ten coils of the three tube groups. From there the partially dried steam crossed over to the left-hand side and into the left header, thence back again to the second chamber of the right-hand header and into the steam chests and cylinders.

WHILE this smokebox superheater was moderately successful, it was expensive to produce and its bulk necessitated extensive alteration in existing locomotive front-end arrangements. Dr. Schmidt, himself, was dissatisfied with it on these scores and in 1902 he introduced a radically different version.

This was his firetube superheater, which established the basic pattern for all of today's accepted designs. It comprised a superheater header—a steam compartment divided into sections which separated the saturated and superheated steam—and two single loops of tubing for the passage of steam in each of a number of fire tubes.

During the previous year the Canadian Pacific had equipped several new locomotives with Schmidt's earlier smokebox superheater. They proved so economical in operation that the Company was kindly disposed toward the newer mechanism and applied the fire tube design to one of its 4-6-0s, which became the first engine on this continent to be so equipped. A still heavier ten-wheeler compound, built by the Schenectady Locomotive Co. for the same road incorporated the initial installation of a Schmidt superheater constructed in this country.

During the period 1903-1909, a variety of other fire tube superheaters appeared on the market. They included the Vaughn-Horsey, which placed the header directly in advance of the front tube sheet, instead of above it; and the Cole design, in which two headers were used—one for each of the Locomotive's two cylinders. Like the Schmidt arrangement, the Vaughn-Horsey superheater found favor on the CP. Units of the Cole mechanism were installed on the Chicago & Northwestern's Nos. 1300 (4-4-2) and 72 (4-6-0), along with the New York Central's Atlantic 915. A third

fire tube superheater, the Emerson, was represented on the Great Northern and the Burlington. The Santa Fe, for its part, experimented with the Buck-Jacob type.

TODAY, locomotive superheaters are restricted to the fire tube type of top-header design, with such slight variations as appear in the Coffin Co. models. As we have already noted, they are all based on the original Schmidt arrangement, though many improvements have been made through the years. In earlier forms, each superheater unit consisted of a single tube-loop per fire tube. Today, however, by increasing the diameter of those fire tubes known as superheater flues, each unit can comprise four tube loops, allowing for a longer steam passage and a higher degree of superheat. The Elesco type A, built by the Superheater Co., is an example of this variety. The same manufacturer's type E provides for four passes of steam, two in each flue, with one unit occupying two flues. This permits application of the superheater to boiler tubes of conventional size, thereby increasing the superheating surface as much as seventy-nine percent, since every tube can be utilized.

In all early superheaters the throttle valve was located in the steam dome and connected to the superheater header by a dry pipe. With this arrangement it was necessary to install a damper to prevent the passage of hot gases through the flues when there was no steam in the superheater coils. Today, most superheaters are furnished with a front-end throttle. Placed on the superheater side of the header this makes it possible to use superheated steam for the locomotive auxilliaries, and since steam is always in the flues the damper can be eliminated. Another complementary improvement is the application of a drier in the steam dome to remove as much unevaporated water as possible from the supply of steam being sent forward to the superheater.

Exactly to what extent does superheated steam reduce condensation losses inherent in saturated steam? The Norfolk & Western set about to answer this question as long ago as 1914. For its test the road used two locomotives of the same type and general specifications, but only one of which was superheater equipped. Both were run under conditions as nearly alike as practicable and the following comparison is the result of that experiment.

	Super-heated	Saturated	Percent Difference
Boiler Pressure	199.2	192.7	3.3
Tonnage Hauled	1198.9	1032.0	16.1
Speed, MPH	19.23	14.78	30.1
Lbs. Coal per Ton Mile	244.3	334.0	26.8
Lbs. Water Consumed	49,622	74,551	33.4
Drawbar Pull Average for Run.....	1410.2	1004.5	40.4

These figures leave no doubt as to the superiority of super-heated steam for locomotive operation. Not only are condensation losses eliminated, but dry steam has greater volume per unit of weight than saturated steam and does more work during admission and expansion on a smaller consumption by weight, per stroke.

Information Booth

EACH month the Lantern Department includes, in addition to a technical article on some ramification of railroading, answers to rail questions of general interest, submitted by our readers. We do not send replies by mail.

1

WHAT provision is made for engines equipped with one type of automatic train control, when operating on foreign road trackage having a different form of A.T.C.?

This condition occurs in comparatively few instances. Where it does, either the locomotives or the roadway must incorporate duplicate apparatus. An example of the former type of installation is that part of the Louisville & Nashville over which engines of the Cincinnati, New Orleans & Texas (Southern Ry.) run. Here the L&N makes use of continuous train control, while roadside inductors have been installed for the intermittent system used by the CNO&T.

On the other hand, Chicago & Eastern Illinois engines, which carry mechanical trips actuated by roadside ramps for A.T.C. in home territory; must also have receiving apparatus for inductors used on the Big Four, whose tracks they traverse.

2

HOW many miles of New York Central trackage are protected by automatic train control?

Including Big Four, Boston & Albany, and Michigan Central territory, 1785.6 route miles are so equipped.

3

LIST specifications of the new 2-8-4s built by the Lima Locomotive Works for the Richmond, Fredericksburg & Potomac.

These ten freight haulers have 25x34-inch cylinders, 69-inch drivers, 245-pounds' boiler pressure; weigh 433,200 pounds without tender, and develop 64,-000-pounds' tractive effort. Their tenders carry 25 tons of coal and 22,000 gallons of water.

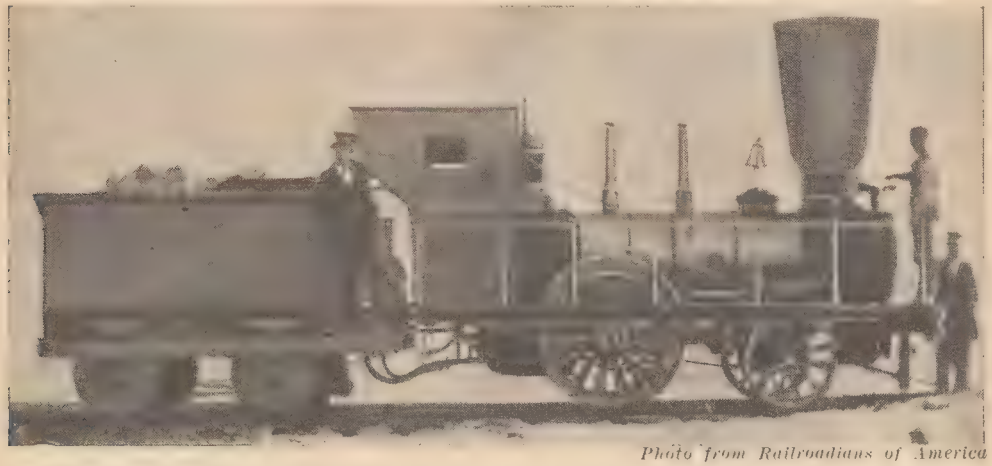


Photo from Railroadians of America

WHILE not the oldest locomotive photo in existence, this daguerreotype of the *Bristol* portrays the earliest engine in America to be recorded by the camera. Built by The Locks & Canals Co., of Lowell, Mass., in 1835, she posed for this portrait in the early '40s

LIMA LOCOMOTIVE WORKS, which has outshipped more 2-8-4s than any other American engine builder, delivered ten of these handsome machines to the RF&P recently. See answer to Question 3

4

PICTURED in an 1897 photograph of mine is a switch yard at Anderson, Indiana. A lone boxcar in the background bears the words "Red Line," and the number 9834. Who owned this piece of equipment?

This was one of the numerous fast freight lines which operated at the turn of the century, presumably as independent shipping agencies but actually under the financial and physical control of certain large railroad systems.

Along with the *White* —, the *Blue* —, and the *Milwaukee Line,* the *Red Line* was backed by the New York Central. The Pennsylvania Railroad in its turn, operated the *Union Star Line.*

5

I HAVE noticed that on railway telegraph systems, a certain wire may be strung between insulators of a different color than those used for the remainder of the network. Does this indicate that a different current is carried over it?

Not necessarily. Generally the purpose of the off-color insulator is to identify a dispatcher's wire. This saves delay when a train conductor wants to cut in on that line.

6

FURNISH particulars concerning the new steam turbine electric locomotive just purchased by the Great Northern, and now being operated out of Wenatchee, Wash.

This engine is neither new nor the property of the GN. It was constructed by General Electric some years ago for the Union Pacific, but at the builder's request went back to the shops for extensive alterations. These included a drastic rearrangement of operating elements and the placement of the two power units back-to-back instead of in tandem. This provided a cab at each end of the giant.

TRENTON trainwoman Dorothy Walker learned to couple up the air before they'd let her punch holes in tickets on the Pennsy's New York Division. She makes three round trips daily between New York and the Garden State Capital

Since rebuilding, the engine has gone into test service on the Great Northern, running between Wenatchee and Seattle.

Picture from I. L. Gordon, Reading Co., Philadelphia, Pa.

WORLD'S first electrically operated semaphore signal was installed by the Jersey Central at Black Dan's Cut, Phillipsburg, N. J., in 1893

We can't give you all of her specifications, but those available are impressive. The two units together have a weight of 527 tons, measure 182 feet between coupler faces, and develop 5000 horsepower, transmitted to the rails through twelve pairs of wheels. The boiler pressure is 1500 pounds to the square inch, and with a gear ratio of 2 to 1, the traction motors permit a top operating speed of 125 miles per hour.

7

WHEN was the Alton taken over by the Baltimore & Ohio?

On July 18, 1931, control of the C&A passed into the hands of the larger system. As you probably know, independent operation of the two roads was recently resumed under the jurisdiction of the Federal Court.

8

TO WHAT extent are the various railroads pooling their locomotives to meet the current national emergency?

We answered that pretty thoroughly in Item 3 of our April, 1943 issue. An instance of a somewhat different sort, however, has just been called to our attention by the Norfolk & Western. This was the heavy repair work undertaken by their Roanoke Shops recently, to put nineteen Chicago & North Western 2-8-2's in condition for the Atlantic Coast Line and the Seaboard, which had just leased them. It is through the complete utilization of shopping facilities as well as equipment, that the private carriers have thus far avoided a repetition of the traffic breakdown of 1917.

9

WHAT is the annual operating cost of a Pullman sleeper, under normal peacetime conditions?

The average cost is about $9,700.

10

ADVERTISEMENT in an 1871 copy of Hearth & Home *outlines joys of traveling via St. Paul & Pacific. Is this line in operation now?*

The St. Paul & Pacific was the corporate name of the first portion of what is now the Great Northern Ry. It was begun in 1857 and owned the first locomotive to turn a wheel in the State of Minnesota—the famous *William Crooks,* built by the New Jersey Locomotive & Machine Company in 1861.

11

LIST Diesel-electric equipment of the Rock Island; when bought and where used.

Diesel passenger power was inaugurated on the CRI&P in 1937 with the receipt of six *Rocket* engines, Nos. 601 through 606, for operation with as many lightweight trains. These power units have 16-cylinder, 2-cycle, 1200-horsepower engines. At present they are assigned to the following runs: 601, between Chicago and Peoria; 602, between Memphis and Amarillo; 603,

Pghoto from Bob Love, 986 Fifth Ave., Freedom, Pa.

NO WAY to run an interurban line. Wrecks like the one shown above cut sharply into Indiana Public Service Co. profits. Two-car section of the swank ***Louisville Flyer*** was skimming the prairie's miles at 80 per, back in 1930, when she overturned below Edinburg, killing her motorman and several passengers

JUICERS still meet in the unscheduled way at infrequent intervals, as witness this January 15th smashup on highspeed trackage of the Philadelphia & Western near Norristown, Pa. Eleven passengers were injured

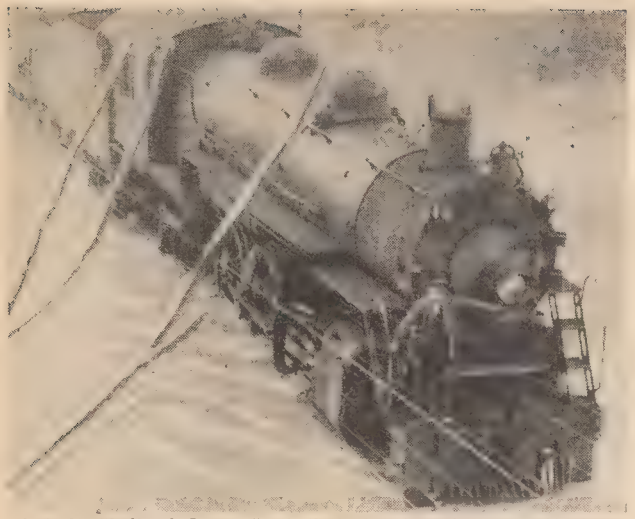


Photo by Shelby J. Lowe, Yard Clerk, Southern Ry., 1587 Marietta Road, N.W., Atlanta, Ga.

SOUTHERN Ry. Mike 4545 cooled her flanges in Omulgee floodwaters at Macon, Ga., this spring

on the Burlington-Rock Island Railroad; 604 and 605, between Kansas City and Minneapolis; 606, between Memphis and Amarillo.

Since 1937, larger Diesel locomotives have been placed in service. Twelve-cylinder, 2-cycle, 2000-horsepower engines include Nos. 625 and 626, received in 1939; 627 through 629, received in 1940; and 630 and 631, received in 1941. The 625 runs between Chicago & Denver; the 626, between Kansas City and Dallas; the 627, between Minneapolis & St Louis (in joint service with CB&Q); the 628 and 629, between Chicago and Denver; and the 631, between Chicago and Des Moines.

Two-thousand horsepower locomotives having two 4-cycle, 6-cylinder engines, include the 624, 622 and 623, received in 1940; and No. 621, received in 1941. They operated between Chicago and Denver.

In addition, two 4000-horsepower, 12-cylinder "B" units went into service in 1940. Numbered 750 and 751, they run between Kansas City and Belleville, Kansas; connecting at the latter point with 2000 h.p. *Rocky Mountain* Rocket Diesels and continuing as helpers to Limon, Colorado, where they again cut off with their cars for the last leg of a run to Colorado Springs.

With a total horsepower of 31,200, the 19 passenger locomotives have wheeled off nearly 11,000,000 train miles to date.

12

RECENTLY I saw a Pennsylvania engine pulling seven metal boxcars. Each had two sets of complicated mechanisms

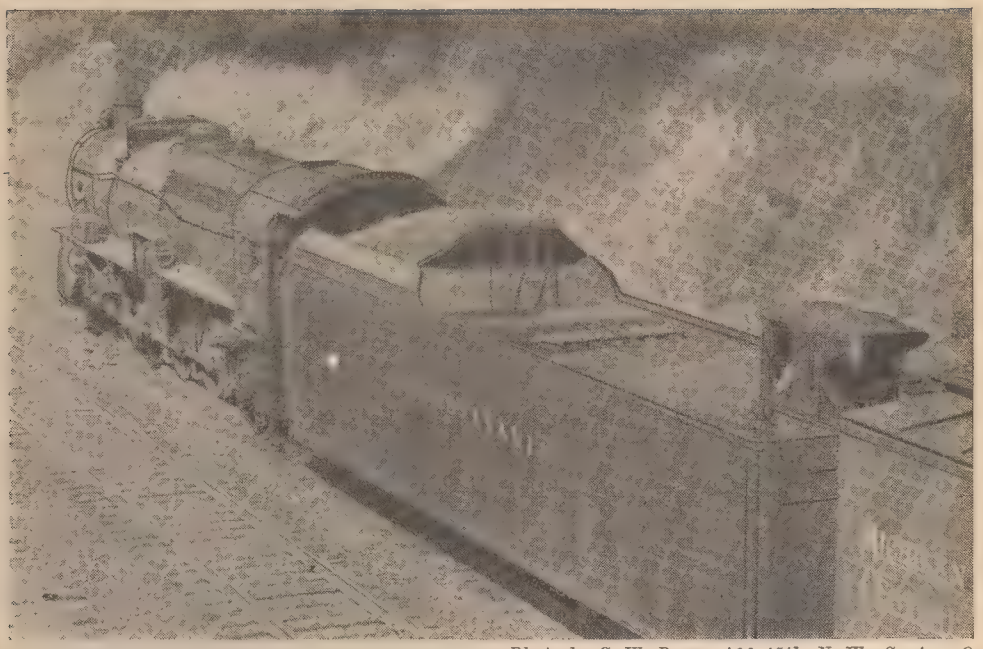


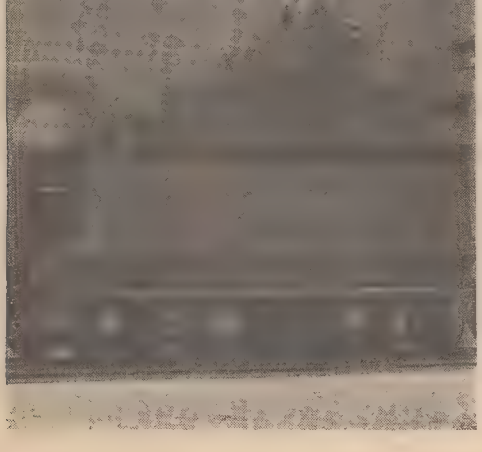
Photo by C W. Burns, 403 15th, N. W., Canton, O.

TWENTY-five-thousand-gallon canteen for an engine of war. The Pennsylvania, which pioneered long distance tenders, uses these giants mainly with its M-1, M-1a and I-1 freight haulers. A still newer design in all-welded; has a three man cab and 8-wheeled trucks

between its trucks, which shot a shower of sparks off to the sides of the rails. What was the purpose of this train?

From your rather vague description we'd say that it was a rail grinding or welding outfit.

Photo by Karl E. Schlachter



13

WHERE is the Portland & Rochester RR and is it still operating? (2) Was the Boston, Hartford & Erie taken over by the New Haven?

(1) Originally owned by the city of Portland, Me., the P&R ran 52 miles between that point and Rochester, H. H. In 1879 the Boston & Maine and the Eastern Railroad each bought a half interest in the property. Then five years later the former system absorbed the Eastern and, with that move, gained complete control of the P&R. Today its trackage is used for freight service only.

(2) Boston, Hartford & Erie was formed in 1864; emerged from receivership in 1870, as the New York & New England Railroad; became the New England railroad after the Panic of '93; and fell into the hands of the New Haven two years later.

NEW YORK, Ontario & Western's Class R 132 was built by Dickson, in 1890

Locomotive of the Month:

Baltimore & Ohio T-3

WAR PRODUCTION BOARD allotment of only 9 new engines to the B&O last year has resulted in far-reaching modernization of existing power. On the Chicago Division, runs between servicing stops for heavy 2-8-2s were extended some time ago, by increasing the tender coal capacity from 17½ to 32 tons, and raising the water supply from 12,000 to 29,000 gallons through the application of an auxiliary tank.

Unfortunately, the basic engine design of these 2-8-2s remained unsuited to high speed service; sixty-four inch driving wheels necessitating undue speed and wear of running parts in QD freight service. For this reason the road rebuilt one such engine, constructed in 1923; increasing the diameter of its cylinders from 26 to 26½ inches, raising the boiler pressure from 220 to 240 pounds, and applying 70-inch driving wheels with improved counterbalancing. The result was a material increase in both starting tractive effort and horsepower rating.

Three more Mikados of an earlier design were later modernized in the manner just outlined, and they have been giving a good account of themselves in the Chicago Division.

However, it was WPB's diversion to other roads of 14 Diesel-electric locomotives originally ordered by the B&O which intensified the present rebuilding program. Twenty Q-1aa locomotives, built between 1911 and 1913 and due for extensive overhauling, were selected. Deviating from past practice, the motive power department is converting these Mikes into a new class altogether, by giving

them a 4-8-2, or Mountain-type wheel arrangement. This necessitated adding another course to the boiler, and applying a front engine-bed section incorporating cylinders, bumper deck and air-pump brackets in one casting. (Ten of the engines will have one-piece engine beds.) Baker valve gear, oil lubricated driving journals, lateral cushioning devices on the rear drivers, a stoker, power-reverse gear, mechanical lubricator, two cross-compound air compressors, a superheater with rolled-in units, and an open type feedwater heater, are distinguishing adjuncts of the new T-3 Class.

Placement of a shielded air predrier on the pilot, and the lowering of the headlight to the center of the smoke-box front, are departures from characteristic B&O practice. Note, too, that the entire barrel is jacketed.

Specifications of these engines, which are coming out of the Mt. Clare Shop at the rate of one a month, compare with those of the Q-1aa machines as follow:

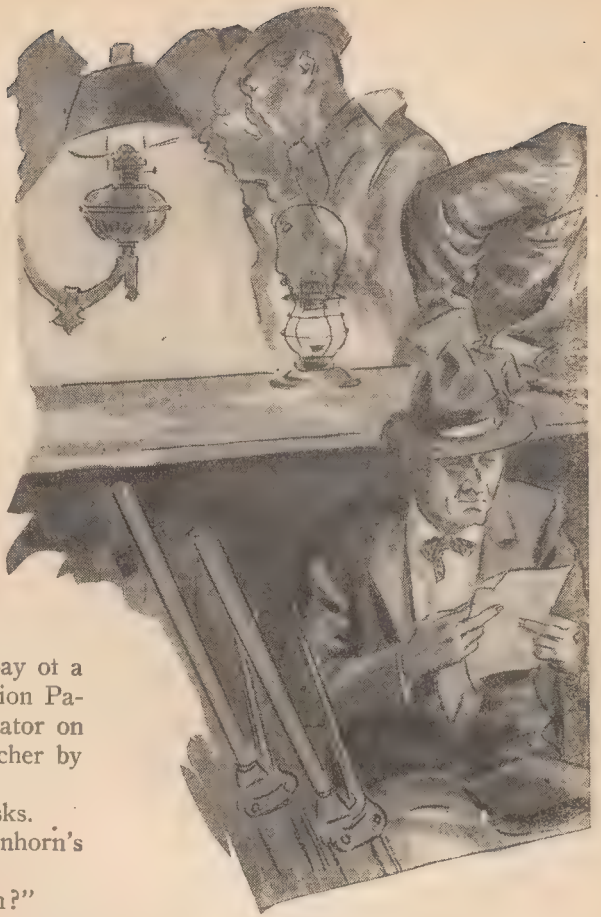
	Q-1aa (as built)	Rebuilt T-3
Cylinders	26x32	27x32
Pressure	190	230
Drivers	64	70
Wt. on Drivers.	223,600	255,000
Tractive Force.	54,000	65,000
Cyl. H.P.	2,128	2,990

Next Month: Cotton Belt 4-8-4

Seasoning the Ham

The New Op's Plenty Green, but So Were You and I When We Started Out

By
LeROY PALMER
Union Pacific Agent
Crucero, Calif.



SCENE: The telegrapher's bay of a small rural depot on the Union Pacific. A young student operator on his first job is talking to a dispatcher by phone.

"Is the extra east here?" DS asks.

"Uh, yes, sir," comes the greenhorn's hesitant answer. "Yes, he's here."

"Well, where is he? Heading in?"

The kid doesn't understand the meaning of "heading in," but he makes a stab at answering.

"I don't know. Uh, I think so."

"Is First 253 there?" DS continues.

"Uh, well, there's a light up there. Uh, yes, sir. He's here."

"Well, for the love of Mike, what are those trains doing? Can you tell me that?"

"I don't know. Uh, they're just standing still, whistling at one another!"

This is an actual case I overheard a short time ago on the district where I'm working. It was the youngster's first night and he didn't have any more idea what was going on or how to give the dispatcher any helpful information, than Jocko the pet monkey. Maybe we had better say: than you and I had the first night we worked an OS job about forty years ago. Can you remember the first night you worked as an op, old-timer?

Well, perhaps you did learn around a telegraph office in a railroad station. So did I, and there is a difference all right. Most of our fledglings here come fresh from trade schools. Although they've been taught a smattering knowledge of telegraphy a lot quicker than they might have picked it up in railroad depots, they have very little idea about actual railroad operation. A boy who has learned his Morse in a railroad office at least knows something about what is going on when two trains meet. But at that, you and I were plenty green when we started out, about as green as the kid I have just mentioned.

Two weeks later this kid had learned that the "whistling at one another" meant

First 253 was telling the eastbound train they were carrying green signals for a following section. Reset the same scene and the boy could tell DS that the extra east was pulling up to the west switch to head in as the brakeman raced ahead of the hog to open the gate; that First 253 was held up by a red block signal until the eastbound train got into clear.

The OS operator is located at an "office of communication"—and an office of communication is no good unless the dispatcher can get intelligent information from the man there. DS was trying to figure out how much delay there would be in the meeting of the two trains at the station where our young friend was working that night, so he could make calculations for their future movement. The kid hadn't the slightest idea what was involved.

A COMMON practice on some roads, especially in wartime, is for the company to train its own operators. Take, for instance, the Norfolk & Western. Fifteen girls from Roanoke, Va., and nearby communities are now being taught, in a company school recently opened in Roanoke, to wield the telegraph key with a view to replacing N&W slingers called into military service. Claude Harris, an extra telegrapher on the Radford Division, is in charge of this school.

After learning the alphabet code, the students are coached to develop the speed necessary to send and receive between thirty-five and forty words a minute, the pace of the average brass pounder. These

girls sit at a long table and are separated from each other by partitions of glass and wood. Each student has her own sending and receiving set, and each cubicle represents an N&W office.

Mr. Harris gives two receiving and sending tests every morning and afternoon. In between tests the girls practice the code. Their instructor moves from one booth to the other checking up. Students are taught to recognize instantly their office call letters and to answer promptly.

After a training period of at least ninety days, followed by a week or two of actual experience in N&W offices, the girls are expected to be reasonably qualified. They are then assigned to the extra list or to vacancies in regular jobs. There is no charge for attending the school, but the students pay their personal expenses.

Another school brought to my attention involves a couple of courses sponsored by the Illinois Central in Mississippi. Under the supervision of Jack A. Corbett, former Louisiana Division operator, the IC has been conducting telegraph classes since last fall at McComb High School and at a Catholic girls' school in Chatawa.

In the class at McComb, forty-one pupils are enrolled. Half of these attend a two-hour class one night, and the other half the next. Sessions are held every week night. At Chatawa, twenty-four high school seniors began instruction on January 4th, along with their regular curriculum. Ten instruments are used. Twice a month Chief Dispatcher A. K. Ellzey gives instruction on transportation rules and train orders. Within sixty days these pupils are ready to work as student operators, and within another sixty days are qualified for minor telegraphic positions on the division.

Approximately twenty-five women have been employed as agent-operators on the Louisiana Division of the Illinois Central within the last six months as a result of these and similar classes. The Union Pacific, for which I am working, has taken on a few girls and I believe they are giving good service. One of them holds a fairly heavy freight terminal job.

I recall that in the first World War numerous women were employed as brass pounders and were, as a rule, faithful and efficient.

NO DOUBT the old-timers got a lot of laughs out of watching and listening to you and me when we began railroading—the same way that we laugh at the stunts pulled by greenhorns in the present crop. The other day a kid coming to work on a third trick for the first time remembered his instructions to compare time with the dispatcher.

"Dispatcher," he said, "I have just ten minutes and ten seconds before twelve o'clock."

"Okay and good morning, my lad," returned the detainer, a grayheaded veteran. "I see you're a new arrival."

A student copied an order for a train; but before it arrived, the dispatcher sent him another order addressed to the operator annulling the original. The youth had his board red and the train was coming close. Badly confused, he was afraid to clear his board, but knew the train would have to get a clearance card to pass it. Frantically he grabbed a pad and wrote out a clearance without benefit of okay from DS. Then he put the operator's order number on the card and hooped up a copy to the flying train. With the clearance as authority, the train rolled by, but stopped at the first telephone booth to call the dispatcher and have things straightened out.

Here's one on a "student" far past the age limit. This old boy was flustered when assigned to relieve a third trick in a small town. Called out of retirement to work his first rail job in twenty years, the brass pounder decided to take along a pint of stimulant to steady his nerves. After several doses he conceived the idea of hunting up an ancient crony, another op, retired and living in the town, to help him hold the job. The two grayheads then got a second bottle to assist them both. It didn't take long to put them in a dense fog.

At two a.m. the op's watch stopped, and

his friend didn't have a timepiece. All trains after that were OS'ed by at exactly two o'clock. DS suspected what was wrong. He was an oldster himself and knew both men, so he said nothing. At six a.m., when the agent came on duty, the pair of old lightning slingers were pretty much befuddled, trying to get ready for the morning passenger train. Of course, the agent told the operator that if he expected to stay on the payroll he'd have to do his work without help from friends or stimulants.

A very young op had orders for a second-class train. Along came an extra ahead of her. The lad was aware he couldn't pull in his board, but he didn't know how to handle the situation. So he called DS and said the extra was coming.

"Okay, boy," instructed the dispatcher, "go ahead and clear them on a card."

Photo from the Roanoke Times

NORFOLK & WESTERN instructor, Claude Harris, checks up on girls taking telegraphy course at Roanoke

Now the kid didn't know whether the man was talking about a calling card, a ration card, or what. He'd never heard a clearance referred to as a "card." After waiting in a nervous sweat until the train had nearly reached his office, he screwed up courage to tell DS they were nearly to the depot.

"Well, clear 'em. Clear 'em with a card!" came the voice of authority, slightly nettled.

The boy was in mud clear up to his ears. He couldn't figure out what kind of card he was supposed to use. Vainly he racked his brain to remember what the rules examiner had told him. Meanwhile, he played safe—kept his board at red. The train pulled up and stopped. Again he called the dispatcher, and said the train had arrived.

"I told you five minutes ago to clear him on a card," DS roared to the ham.

"Yes, sir. But what kind of a card?" was the timid response.

Well, when you and I started out, how much did we know? As far as that goes, how much in proportion to what there is to learn about railroading do we know now? Not a great deal.

FROM experience, watching these youngsters here on the UP's Los Angeles Division—for which I'm holding down a trick at Crucero, Calif.— I'm convinced that their period of learning the rudiments of the railroad game is not longer than we should expect. When these boys do get a little wise to what's going on, and why, they are usually willing and anxious to do a good job. In fact, if DS asks them to carry an order a half-mile to the far end of a siding, they are likely to

answer, "Sure I will," while the veteran may say: "Nope. Can't get 'em. They're out of my reach, clear down to the east end."

In railroad telegraph service nowadays there are two kinds of student ops: greenhorns, usually just out of school, and old-timers lured back to service. Many of the latter group have been on the retired list but, through patriotism or boredom, enticed by the fact that age is no longer a barrier, are tempted to sit in once again at a telegraph desk, handle a key and dispatcher's phone, and copy train orders as of yore. They feel they are indispensable again, an active part of railroad life. Once more they are helping to guide the rush of traffic.

Young or old, if a student is willing to learn—the stripling to find out what he never knew and the veteran to familiarize himself with ways and methods which have come into use in his absence—he will make a good employe in a reasonably short time. Most of the student ops are cooperative. Once in a while we get a bantam who tries to tell the old-timers how to do things according to the trade-school teaching.

More often we get a back number who has been away so long he's forgotten it all and can't seem to learn again. Cliff Funkhouser mentioned such a case in a true tale. A veteran, back in service, thought at first: "I've forgotten more than these guys know!" He soon learned, however, that he himself had forgotten and would have to become humble and willing to learn, not only what he used to know but a lot of new wrinkles as well.

The oldster who can't adapt himself is worse than the green youth. I know of one office where a "student op", many years beyond any known age limit, was sent to work. He could have fitted in and been a

OLD-TIME lightning swinger, back on the job for the duration, reports to the Chief Dispatcher. Experienced men are welcomed with open arms

real help, for he was fairly capable and experienced. But this has-been was so unadaptable, so unwilling to cooperate, that he antagonized all the men with whom he worked. The fellow was so set on doing everything as he thought best, regardless of instructions or advice, even from officials, that he actually ruined valuable company material and caused serious loss to the railroad. At last he flopped completely on the job and quit in disgust, much to the relief of his associates.

I'VE NEVER forgotten some advice given me by Eddie Ginaine, the chunky little Irishman who taught me telegraphy in the depot at Elkhorn, Wis., on the old Chicago, Milwaukee & St. Paul.

Said Eddie: "Read and study everything you see around the stations—circulars, letters of instructions, bulletins. If you don't know what they mean, ask me. If I don't know, we'll try to find out, the two of us. Ask questions. That's one way to learn."

Another piece of advice from him was the old adage: "When in Rome, do as the Romans do." Nothing makes a newcomer less popular with his brothers than suddenly trying to revolutionize the working plan of a telegraph office, an agency or an interlocking tower. Time-tested methods are doubtless in use wherever you go, and the gang you work with are going to resent an upstart seeking to establish new customs. Most ops are willing to listen to suggestions from a newcomer. Occasionally he has an idea that is really an improvement on the old way of doing things. If he goes about it tactfully, he won't make enemies.

I remember one fellow bucking the extra board on a certain division. Not much more than a student, he did have some good ideas. However, instead of diplomatically making suggestions—as Dale Carnegie recommends in his book, *How to Make Friends and Influence People*—this bullhead would proceed, without consulting anybody, to change the arrangement of stationery, tariffs, train-order pads, order-hoop racks or anything else that seemed to him to need improvement. The relief man, coming on duty, would find the office so altered that he hardly recognized the place. Often things could not very well be changed back, and the old force had to accept his arrangement, good or bad.

As a result, the man came to be disliked all over the division. People dreaded to hear that he was to be sent to their office. They never knew what radical changes would be made as soon as he got his coat off. Finally a long-suffering agent licked the tar out of this pest and he got wise that, as the agent said, he'd been making a "damn nuisance" out of himself.

Most of the boys going to work now know just what they were taught in trade school and are up against a tough proposition to learn the abbreviated Morse of railroad telegraphy. Using the telephone for all train-order work and conversation with the dispatcher, they don't have the constant practice we used to get when it was necessary to make all our calls with key and sounder. They need a lot of determination to keep practicing until they become skilled telegraphers, for Morse men are not indispensable any more except at terminals and relay offices. A lad who has guts need not worry about the Morse code—a lot of dumb but persistent folks have learned it.

I recall listening not long ago to the operator in "S" Los Angeles, our relay office for Western Union business, go through a thirty-minute struggle to get a few short messages to one of these boys. The student stuck right to it, "breaking" on almost every word and asking for repetition. At last he gave his OK and sine. Charley Moore, a veteran who was working at our western freight terminal, Yermo, used the wire just after the kid finished. I heard him remark to the operator in "S" that he remembered when he copied his first telegram.

"Boy, was I proud!" said Charley.

Many of us oldsters can recall similar emotions. Brass pounders years ago—if they were good in the first place—soon rubbed off the rust and became fair Morse

operators. But if they never used a "bug" or automatic key, they hate bugs and dislike to copy bug sending, which is much faster than, and different from, hand sending.

Not long ago I heard an excellent telegrapher say: "No student should be allowed to use a bug until he can send good Morse by hand." Maybe that's putting it too strong and maybe it isn't. To be a fast Morse man nowadays it is almost necessary to use a bug. Few lightning slingers will tackle a heavy job without one.

However, there's no doubt that many students try to make speed with their Blue Racer or some other brand of automatic key, before they have learned to cut off the right number of dots to make perfect characters. Too many send P for H, and H for S. We hear it on the wire all the time. The certain earmark of a ham is jerky, sputtery bug-sending at high speed. Fast bug-sending can be beautifully spaced Morse, but the desire for speed before an op has learned to form correct combinations has prevented many a young chap from ever becoming a star Morse man.

THE FIRST relay job I ever had was in the Southern Pacific office at Tucson, Ariz., thirty-seven years ago. The manager told me:

"Palmer, it's a damn good rule not to try to send faster than you can receive."

We've all heard some bird trying to burn up the wire sending, but when he got on the receiving side he couldn't take it. Managers of busy offices like a telegrapher who keeps busy at the speed of the op he is set to work with. Such men handle the most business. Trying to speed up with a receiver who breaks you continuously is just a loss of time. The best relay operators will slow down and space carefully when sending to a poor receiver. Thus the delay caused by the slow receiver, stopping with a request to repeat words he didn't get, is reduced to a minimum.

The train-order signal is the most important thing for which the railroad op has to be responsible. Handle this job yourself. Don't let anyone else touch it, even if you're only a green student. You are the boy who knows whether the board should be clear or at stop. Many an order has been overlooked by some op, who wanted to be helpful, pulling in the board after a train passed when there were orders on the desk for a following train.

If you're working under the system of "always at clear except when at stop for orders," it's a pious idea, as one old agent friend of my youth put it, to look at the position of your train-order signal when any train is approaching. If it's at stop and you have no orders for the crew, you're going to have an embarrassing delay to explain. If at clear when you have orders, it's likely to be just too bad for you. This one glance has saved many an op his job.

If the pike you work for uses the system of "always at stop except when cleared to allow a train to pass for which there are no orders," don't get excited and yank your board to clear when some hoghead close to the depot blows a deafening blast —unless you are sure you have nothing for the train. Better to stop them than miss delivering an order.

Another bit of advice my old agent friend gave me is this:

"Never let the dispatcher or anyone else rush you in handling train orders. That's the time you're going to overlook something. When trains pile up at your station and your desk is covered with train orders and a couple of skippers are yelling for you to clear them so they can beat the other guy out of town and the dispatcher is trying to hurry you up, that's the time to slow down and take things easy, considering carefully every move you make."

At nearly all stations now, the op "hoops up" the orders to passing trains. Our job is to connect with the flying train and also be sure everything is right when we do. Nothing will make an engineer madder than getting a flimsy written with poor carbons, hardly readable in the dimly-

CENTRALIZED traffic control boards on the Missouri Pacific make the dispatcher's job a goal for the ambitious brass pounder

lit cab at night. No railroad wants an op to economize to the extent of using worn-out carbons. Don't be too lazy to keep fresh ones in the train-order pads.

Train-order paper is very thin tissue. A few drops of rain will ruin an order. One student op I know, without anyone suggesting it, kept on hand cut squares of old newspaper which he used to wrap his train orders in on rainy nights, before placing them in hoops.

Trains picking up orders frequently race by a red board at high speed, expecting the operator to do his stuff. Such a train will be seriously delayed if she has to stop. A careful check of the orders before you put them in the hoops will often prevent trouble. Is your date correct? Your address? Have you forgotten to sign the dispatcher's or the super's initials to the order? Any of these errors will stop your train. Not only the youngsters make these blunders—we all do. It's easy for anybody to put the wrong order number or write in a wrong date on a clearance card.

I've known cases of the operator handing up to a speeding train orders which were addressed to another train following. The dispatcher didn't know which train was ahead. Such mistakes cause bad delays, as the ballast scorcher usually runs away by you and, of course, has to stop and get the matter straightened out. As your train approaches, look carefully at the engine indicators to see what train it is before you hoop 'em up. If it's the wrong train, step back and let her stop.

This last move may save somebody's job. I heard of a case where a young hog-head, running light on a helper engine, was more anxious to get back to his terminal than to check his orders closely. He caught an order and a clearance addressed to another train. Not noticing the error in

address, he kept going, though he had no right to pass that red board.

EVERY op has a standard book of rules to guide him. We all know we are supposed to listen to others repeat the orders we receive. It's old stuff to caution an operator to do it. Nevertheless, it is smart to follow that rule. Errors which slip by an overworked train dispatcher may be—and often are—caught by alert ops.

I know an operator who heard a dispatcher put out a string of waits for a certain train. The op had copied the order on a scratch pad for his own information. Then the dispatcher issued another order, stating that this train would run one hour late on the original order and wait at a certain point until such and such a time. Of course, the brass pounder knew the number of the first order. It seems that DS had figured an hour too much on the last wait, which he had intended to match up with his run late on former order. The listening op had caught it. He called the dispatcher's attention to the error and probably saved a bad delay.

Here's one we all have to look out for. In this case you're working under an "always at clear" system. DS sends you what is known as a "peddler" order—an order to an eastbound train, to be delivered by a westbound train. But unexpectedly the eastbound shows up first. DS tells you to deliver the order at your station. Your eastbound board is, of course, clear. Get it to stop position right now! If you don't, you're liable to be trying to hoop up one on a clear board.

Look over copies of orders carefully before you file them away to be sure they've been delivered to everybody addressed.

The operator who really helps the dispatcher is the one who gives him all the information he can about trains at or near his station. Here in the West the clearness of the air often enables a telegrapher to see trains a long distance away. Some men on the Union Pacific report the arrival and departure of trains at sidings miles distant; they can see the movements plainly from their offices.

When a train which the dispatcher has cleared and undoubtedly does not expect to stop at your office, does stop or is delayed for any reason, the book of rules does not require you to tell DS about it; but, as expressed by my old friend, it's a "pious idea." Your dispatcher appreciates such information. It may be a big help to him in arranging meets or waits for that or other trains.

For the most part the new student ops, both male and female, learn fast. We have two or three young fellows on the Los Angeles Division who are working good agency jobs with less than two years' "whiskers." Another became a train dispatcher in less than a year. These boys—and the girls—are going to realize some day that they were important cogs in the great machine which America built to ensure victory.

Singing Wires

OFT as a child, I stood near by
This pole, when sunset lit her fires,
And heard, like harp-strings in the sky,
The sighing, singing wires.

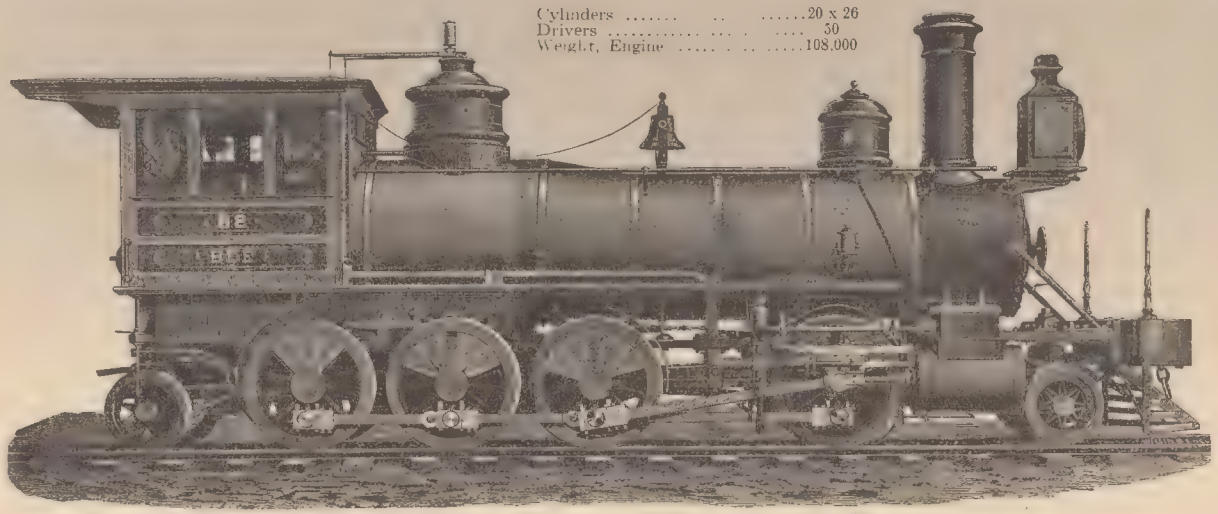
I knew they stretched across the lands
To places where I ne'er should go;
Linked minds and hearts with trembling hands
That wavered to and fro.

Just as the shell may now control,
With curving lips, song of the sea,
So wires can sing within the pole
That once was living tree.

Though childhood days have vanished long,
Sometimes when sunset lights her fires,
I stand and listen to the song
Of sighing, singing wires.

—K. Gusling in *Louisville Courier-Journal*

The Rip-track ALBUM



LEHIGH VALLEY *BEE*

EXPLODING the myth that the first 2-8-2 was built by Baldwin for the Japanese (1897), this steel engraving depicts one of two engines of the same wheel arrangement constructed twelve years earlier for mountain service on the Lehigh Valley. Their designer was Master Mechanic Alexander Mitchell, who had already originated the Consolidation type.

As the print indicates, the trailer wheels were something of an afterthought; Mitchell having originally constructed the *Bee* and her sister machine, the *Ant*, as decapods. Removal of the fifth pair of drivers and the substitution of the coil-spring cushioned truck, together with the elimination of flanges on the fourth set of coupled wheels, made for increased flexibility. In actual service these engines passed freely through curves of 300-foot radius.

The Callboard

Who's Who, in the Railfan Crew

Vic Neal

HE specializes in Erie shots. Above: Erie Limited, engine 2943. Below: Fast freight No. 77 gets under way at Hornell, N. Y.

RAILCAMERIST "VIC" NEAL of Wellsville, N. Y., who occasionally contributes photos to *Railroad Magazine* and the *Erie Railroad Magazine,* is especially proud of the picture of his for which the *Buffalo Courier Express* awarded a prize in a recent contest. The successful entry is pictured below.

Vic's interest in rail photography originated with a desire for detail shots to use in model railroad construction; for he and his buddy, John W. Fontaine, jointly operate a miniature pike known as the Allegheny Southern Lines, at Wellsville. Vic is Superintendent of the Southern Division and John of the Northern.

Part of this pike was on display at an Erie Day Celebration sponsored by the Brother-

JOHN FONTAINE built this "Q" gage model of Erie Mother Hubbard 1005; operates model pike jointly with Vic Neal

hood of Locomotive Firemen and Enginemen at Howell, N. Y. Vic exhibited a model Erie freight train headed by his ¼-inch scale Erie 2-8-4 type, No. 3305 (now owned by Vincent Ryan, Kenmore, N. Y.)

"One of the proud moments of my life," Vic recalls, "was when I received the personal compliments of C. E. Denny, then President of the Erie, for this exhibit."

Since then he has shown Erie models in the transportation building at Alfred University.

Thirty-seven-year-old Vic Neal has never forgotten an encounter with a big hook which occurred when he was 16.

"I was driving my father's pick-up truck to get loam for the garden," he says. "While I was loading it, I noticed a wrecking train pull in on the tracks paralleling the road and stop with its big hook just opposite my truck. Next, I cranked the car and attempted to drive off. But the rear wheels were embedded in a soft pipe-line ditch. I was stuck. A member of the wrecking crew grinned at my predicament and called out, 'Maybe we can help you.' Well, sir, almost before I knew what was happening, the men had hooked lines to my car at strategic points and lifted it bodily onto the road. After profuse thanks, I headed for home, with a personal reason for boosting railroads whenever I could."

Though Vic once came close to working as a B&O tallowpot, he has never actually been employed by any railroad. At present, he has a war job as gear gutter for the Worthington Pump & Machine Corp. Two sons, aged 13 and 17, and their mother, share in the enjoyment of Vic's hobbies.

"Some women don't care for fantrips," the railcamerist states, "but Mrs. Neal insists

HOOKAH hallucination? Pipe dream to you! U. S. soldiers in broiling Central India built this railroad spur around a tree; left it uncut until actual operation ended its umbrella usefulness

on coming along. In fact, her idea of a thrilling jaunt is to ride an engine cab or an open gondola. She'd even travel on the locomotive pilot if she could. Together we get quite a few good pictures."

Last month, you remember, we ran a dramatic shot from Vic Neal's collection showing an Erie engine, 3306, which had plunged over an embankment. Regarding this wreck, he says:

"On May 5th, 1929, westbound Extra No. 3306 had just pulled off the Buffalo Division onto the River Line, a cutoff between Cuba Junction, N. Y., and Hunts, N. Y. Engineer Strickland was holding her down to a speed of five or six miles per hour when the entire fill collapsed under the engine. Strickland says he could think of nothing but his family as he made the wild plunge into mud and stone, and coal from the tender. Fortunately, neither the hogger nor his fireman, S. H. Ballard, were seriously injured. Even the 3306 regained her health, although she had to be completely dismantled to get her out of the boggy hole. The cost of this 32-mile stretch of track has been estimated at a million dollars per mile because of the necessity for continual repair work."

Vic's collection of rail-photos is a source of real joy to him, as are the Allegheny Southern Lines.

"My hobbies," he enthuses, "have not only given me fun but have enlarged my circle of friends. Drop in and inspect the ASL next time you visit this section of the country."

Mae Wells

AMONG the girls studying telegraphy at the Norfolk & Western school in Roanoke, Va., is Miss Mae Wells, daughter of an N&W section foreman.

"I feel that I can best do my share in the war effort by releasing a man for military service," Mae tells us. But her interest in the course is even more than patriotic. Mae has high hopes of becoming a full-fledged brass bounder, handling a trick of her own; and when that happy day dawns she will be a rail-active member of a railroad family with a splendid record of service. Besides her father, the embryo operator has a brother working for the N&W, not to mention three uncles and both grandfathers, all veterans of the iron trail. Mae, who graduafed from high school a few months ago, lives at Arcadia, Va.

* * *

ENDORSEMENTS of the plea of Thomas T. Taber, president of the Railroadians of America, to stop the senseless scrapping of historically valuable old locomotives and railroad museum pieces, as published in our April issue, are coming in from many sections of the United States and Canada. Typical of the comments is this one from David L. Joslyn, official Espee photographer, 2164 Castro Way, Sacramento, Calif.:

"It is indeed a shame that the few remaining old engines in this country should be hauled off to the scrap pile. Americans in need of scrap metal should dig into the huge reservoir of useless stuff before demolishing priceless relics."

* * *

AMERICAN "rails" who are officers in any branch of the armed forces and stationed in England are invited to attend a club recently opened by four British main-line railways and the London Passenger Transport Board at 44 Wilton Crescent, London, S. W. 1. Purpose of the club is to provide a place where British and U. S. officers interested in transportation problems can gather socially and exchange sandhouse gossip.

Sir Ronald Matthews and Sir James Milne, officers of the club, wired J. J. Pelley, President of the Association of American Railroads: "Our objects in organizing this social center for our American allies is a desire to return some of the hospitality which has always been so lavishly extended to officers of British railways when visiting U.S.A."

* * *

GRAND CENTRAL TERMINAL will be the topic of an address by Robt. P. Hayes at the June 25th meeting of The Railroad Enthusiasts, Inc., N. Y. Division. Bob will relate experiences from his 17 years of work in the Terminal's Information Bureau. Movies will be shown. Everybody invited. Time, 7:45 p.m. Place: Grand Central Terminal, N. Y. City, Room 2728.

* * *

ALONG THE LINE, publication of the New York, New Haven & Hartford, has lost Associate Editor Richard Joseph to the armed services. Dick enlisted as a Volunteer Officers Candidate in the U. S. Army and has reported at Camp Upton, Yaphank, Long Island, N. Y.

Coming to the New Haven in 1940 as an Associate Editor he later edited *The Rider's Digest*. Fortunately, all old ties have not been broken since Dick has promised to write a column for *Along the Line* as long as his military duties permit.

An ardent railfan, he is a member of the New Haven Railroad Club and American Railway Magazine Editors' Association.

COMBUSTION experts, get a load of this! Faulty operating stoker caused Second Erie Limited to throw this smoke screen

Father-Son Crews

By "MILEPOST" McGUIRE

TRAIN or track work is not merely a routine job. Every day and every trip bring new problems that you must solve quickly and correctly if you aim to keep your name on the payroll. The other day a veteran freight crew here on the Santa Fe was pulled out of service for running 4000 feet beyond a meeting point before they could get the train stopped. In the case of a painter, a plumber, a bricklayer or almost any other craftsman, a mistake can be covered up and a job begun over, as part of a day's work. As the carpenter said when he hit the screw another blow with a hammer, "There's tricks to all trades but mine."

Railroading isn't like that. Every minute of every day you are on duty must be accounted for. Instances of covering-up are so rare and exciting that *Railroad Magazine* pays cash to get the story and pass it on to readers. Few, indeed, are the rails who can say, "I learned the trade under my father."

The commonly accepted rule in railroading is: "No man may be hired who would, or might, eventually be under the supervision of a relative." In days gone by it wasn't that way. Only when railroaders began getting higher wages and shorter hours than cotton pickers, did the managements act fussy about whom they hired and whether or not the prospective employe could read and write.

Too often capable youngsters took up railroading only under the supervision of relatives who promised them help and guidance and a sure job of "running" in a very short time. If the desired promotion did not come along in short order, the boy would make a quick change in headquarters and go on through life with both hands and feet intact.

Many a fine lad was impressed into railroad service against his own desires. Especially was this true forty or fifty years ago in the track department, where wages were 90 cents for ten hours of heavy labor, with the certainty of little or no work in winter time. A track foreman's job depended upon his getting section hands as much as upon anything else, and when his sons grew big enough to carry a crosstie they started doing it whether they wanted to or not.

At least, that was the way my grandfather, Tommy McGuire, handled the situation. He had four sons: Chance, Guy, Albert and Everett. That constituted a full crew, winter or summer, and therefore made Grandpa one of the best foremen on

the old Leavenworth, Lawrence & Galveston (now Santa Fe). One of the four brothers, my Uncle Everett, was eventually killed by a train. Another, Uncle Albert, begged off trackwork with a promise to learn the newspaper business; and now, at the age of nearly seventy, instead of tamping ties and laying steel, is operating a linotype machine on the *Wichita Eagle*.

AUTHOR: Paul McGuire, known as "Milepost"

Grandpa's labor supply was noised around and he was offered a better section on the Missouri Pacific. He told the sons that were left to pack up the company's tools and move with him. However, my dad, Chance McGuire, was given the home section, so he stayed with the Santa Fe fifty-one years longer. My Uncle Guy made the change and was soon promoted to a section boss's job at Monett, Kansas, on a branch line that was abandoned several years ago. He is now water superintendent in Winfield, Kansas.

The story is somewhat the same on the maternal side of our house. My grandfather, M. A. Hurst, was an engineer on the D&MA (now Missouri Pacific). When my Uncle Sid got tired of going to school, he was kept out of mischief by being put to work firing for Grandpa, and was soon a runner with his own engine. Fifty years of looking down the high iron were rewarded with a pension a few years ago.

WITH such a background is it any wonder that I, too, am a railroader? The answer is yes. You learn railroading in your youth or not at all, and in my youth the above mentioned "relative rule" was in effect at some places and was strictly enforced.

An assistant superintendent offered me $77 a month the summer that I became sixteen years old, and with a promise of $110 the next summer if I finished high school during the winter. I didn't remind him that I might some time be under my dad's supervision, nor did I need to remind him of his promise when spring came.

A lot of sarcastic remarks were made in the sandhouse about me working under my dad for a little while, even though I entered the service as an extra gang timekeeper under another roadmaster. Equal opportunities were given to many other employes' sons, a number of whom are still on the payroll after thirty years of service.

There may have been advantages in being an official's son, other than opportunity to learn the work, but I never found them. In the first place, everyone who dislikes your father will hate you even more; and don't think that some of them won't deal you from the bottom of the deck. Differences between my father and another roadmaster paved the way for my only discharge.

If the old man covers up for you he jeopardizes his own job two ways; and it's always worth more than yours, so he doesn't try it. My dad actually worked me harder and did less for me than almost any other roadmaster—and I've locked horns with about a hundred of the critters.

I was assigned my first section under my father. This made me an outcast, or worse, in the eyes of inferior foremen, not a one of whom made half the struggle to stay on the payroll that I did. If my dad ever gave me a break I'm sure it was unintentional. He wouldn't even give me a decent handcar two or three years after other foremen had motorcars. When a good handcar was replaced by a motor he would have it shipped to some other territory and the worn-out ones were turned over to me to "tear up." Eventually I received a motor that had been replaced by a new model on another section. It would barely pull three men and myself out to work if no wind was blowing.

Mine was an eight-mile section, uphill all the way, and we were trucking out ties every day. I had to work on that car an hour or so every day to keep it running. One day, in exasperation, I started to break it up with a spike maul when one of my men asked, "Why don't you ship the damn thing in before you break it up?"

EVERY minute of every day you are on duty must be accounted for

Figuring that we were stuck either way, we rolled the old car back to the yard. Then we loaded it and four wornout handcars I had on hand, into an empty boxcar and told the agent to be sure and bill them out on the local to the storehouse. As soon as the scrap had left town I wired the roadmaster what I had done. He brought me a good handcar the same day and promised me the very next motorcar that was available. I don't know whether or not he "covered up" for me. I was at the end of my endurance. If he gave me a trimming that day it didn't take, but I remember plenty of them that did.

I might have been a pretty sorry foreman. I had no way then of knowing whether I was getting the job done or not, but he kept me in hot water continually by insisting that I was not. The first fall he bawled me out every other day for not getting the right-of-way burned. The track was rough. Before I could get it patched we would have rain and I'd be forced to begin over again on all the mudholes.

At length he lost patience with me and said he'd have the adjoining foreman burn it for me, as that fellow and all the other section bosses had finished. That was a disgrace if there ever was one. Sure enough, the very next time I went to the end of the section, I found that a half-mile had been burned off from both sides of the track.

Well, I burned the right-of-way then, right and left, and soon had it cleaned off all of the way to town. One day the next spring I had occasion to go up the branch on a work train and saw that I had burned more grass than all the other foremen on the branch put together. Anyway, I learned how to burn the right-of-way, which some of those old-timers never did.

MEANWHILE, the roadmaster insisted again and again that four men ought to put in 100 ties every day; but the best we could get was eighty, although I tried every plan I ever heard of or read about. I had four real trackmen who knew how to do the work, so I naturally decided the poor showing was due to bad management on my part. No man worked harder than I did, but some of them could put in more ties. We inserted 3500 ties in less than three months, along with other jobs.

I ordered more ties. I thought I'd rate a new trailer or something, for trying so hard; and pretty soon I began to get it. Letter after letter from the Superintendent bawled me out for careless handling of time, distribution and material. It seemed that other foremen charged out an hour's labor for each tie inserted, while I had shown almost three ties per hour. Instead of reporting 75 to 80 ties per day, I should have shown 30 or 35, which was supposed to be a good day's work. Not knowing where the error lay or how to correct it, I could only insist it had happened that way.

The Superintendent had made a reputation for himself by running the division on a shoestring without even tin on the points of it, and he came down to locate those 3500 new ties. He didn't have any trouble finding them, eight and ten to the rail. Then he threw one brainstorm after another. He yelled himself hoarse before we got to the end of the section; and I had already quit answering his questions, so he just gurgled to himself.

The roadmaster courageously told him that no new ties had been put in the track during the previous seven years. I wasn't excited, because I knew the gage was bad and the track had to have ties to hold the rails together. However, when extra gangs surfaced the branch the next year, with instructions to put in only one tie per rail, I wondered why he hadn't fired me.

Instead, he let me relay the steel with 90-pound rail. I did an economical job with some special surfacing on my own section and put in quite a few more ties. The other gang foremen helped out with some fancy work here and there, and the relief foreman laid all new crossings.

At last I had a section in first-class shape, for I had repaired all fences the previous winter. Even though Old Moneybags had cut off part of the men, I had everything my own way and already knew what I would do for the sidetracks, ditches, etc., while waiting for the track to get rough or a tie to rot out.

Alas! I did not handle that particular section a day after the rail had been relaid. Half the sections were cut off, and I was barely able to cling to a job on another branch, where I had to begin all over. However, I soon found out that I could more than hold my own with other foremen. The next summer I laid rail and surfaced track on main-line divisions.

There were four roadmasters on the division at that time. Each had one son employed. Bob Smith was an extra gang foreman when the sections were cut off, but he did not have "whiskers" enough to keep a regular section, so he accepted a position as street commissioner at Chanute, Kansas—a job he still holds. Another one, Lee Oliphant, is a long-time clerk in the Superintendent's office at Chanute, while the fourth, Rolland Gidney, is shop apprentice foreman at Arkansas City, Kansas.

Like myself, if any of these fellows ever got a break because his father was roadmaster, I never heard of it. At least three of the four were fired once. All of us were cut off in force reductions like the other hands and we have moved many times to hold our service intact.

I have been asked to mention some evils of this practice of hiring relatives, but all I can think of is the kid's essay about the "Snakes in Ireland." It was short and to the point. He wrote: "There are no snakes in Ireland."

I've seen relatives come and go. I've seen them ramble down the track talking to themselves. And in all sincerity, I believe the railroads get a real bargain when they hire a young man who has grown up in a railroader's home and fully comprehends the risk and hard work, rawhiding and exposure, demanded on the job that he expects to make him a livelihood until he reaches the age of sixty-five.

Children just don't grow up along side the track and hate the railroads. I've never yet heard a railroader's family complaining about the "company" most of the time, as families often do about other occupations. Man, woman and child, we're all proud to be railroaders, and others respect us as such.

Sometimes an official will have the same kind of feeling for the employes that they have for the company. Such a man was R. H. Allison of Marceline, Mo., one of the best-loved Superintendents on the Santa

Fe system. It is often said that Allison knew the names and ages of all the employes' children and what grade each was in at school.

If anyone knew the evils or advantages of nepotism, Mr. Allison certainly should have, for he invariably gave preference to employes' relatives when hiring help. As a result of this continued practice, almost the entire division personnel is said to be kith and kin. You need several years to get it all figured out, and I was on the division only one summer; but two or three facts now come to mind.

Three Greenley brothers—John, Horace and George—were section bosses on the St. Joe branch. Fred, Sikes and Frank Lawson are brothers and main-line foremen. John Hoskins is track supervisor. One brother, Jess, is an extra gang foreman; another, Charles, is a king snipe. Chesley and Chester McAfee are twins. Both were section foremen until Chester was promoted to track supervisor. Their brother Ralph is an assistant foreman.

I am no longer familiar with the other departments of the Missouri Division and recall only one fact of interest there. That was when a train crew was called at Shopton, Iowa, and the Mayo family filled every position. Someone thought all Mayos on one train was too much of a good thing; and to avoid a record of any kind, one of the boys was set back for a following section.

Maybe Mr. Allison had the right idea about hiring help for a fast main-line double-track division. Anyway, he was promoted to General Manager. All I know is that they were a congenial group to work with and they often invited me to become part of the family circle

Yes, it's against the rules to hire relatives on the Santa Fe; but when the management does it, who can complain? An outstanding instance occurred when President E. P. Ripley's very young nephew, P. Ripley, was appointed Superintendent of our Southern Kansas Division. Contrary to the current fiction trend, he was an excellent official and would certainly have made a name in railroad history but for an early demise.

Division Point

By H. R. PALMER

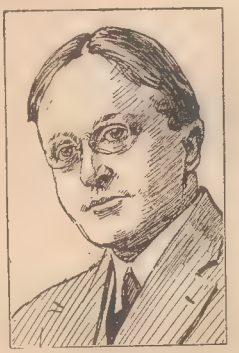
MANY of you remember the Klondike rush of 1896, when miners and tenderfeet alike flocked into the gold country in a mass migration. Because I was one of them, those stirring events are embedded in my memory. As a mining engineer I developed gold claims in the States and in the Dominion.

The world seemed vast, with endless horizons. I was young, husky, blue-eyed and apple-cheeked. Just to stand on the rear of a train in those days and watch the prairie roll away from under you was a thrill. How well I recall riding over Jim Hill's "400 miles without a curve" on the Great Northern, with its typical little towns—you might call 'em such—each consisting of a small frame depot, maybe a water tank and grain elevator, a farmhouse or two in the distance, and that was about all. Gazing at the sky line, the

last thing you'd see was the grain elevator "setting," like the sun, beside the vanishing track.

Farther east, you ran into different scenery—a land so full of lakes and streams that you couldn't go far from the rails without a canoe or boat of some kind. It was like that around Lake of the Woods, where I was working most of the time in 1896 and '97. This great body of water looks tiny on a map but is 150 miles long. In parts of it you can get out of sight of land.

At the northern end of the lake stood Rat Portage, which has since been renamed Kenora. This was my headquarters. A very old settlement, it had been named originally, three hundred years before, from the large number of muskrats inhabiting the vicinity. Rat Portage was a freight division point for the Canadian Pacific. We appreciated the CP service, for wagon roads in that locality were few and poor. When you got away from the railway you had no method of travel except afoot, by saddle pony, by canoe or, in winter, by dog sled.



H. R. Palmer

The 1890s was a time of excitement in and around Rat Portage. The whole area was dominated by the Canadian Pacific. Most of the population either worked for the railway or had relatives who did. As a result, they paid little or no fare when traveling. Enroute, they received good hotel service at low cost, for the best hotels along the line were owned and operated by the CP. But the people in that section who had no railway connections were just out of luck—they paid full rates for everything.

Since I was obliged to make frequent rail trips and freight shipments, I fell into the habit of getting whatever I could from the CP through my friends. One of the latter was a big blond trainman on a regular through freight run between Rat Portage and Winnipeg. For the sake of my story, I'll call him Charlie.

Charlie was sick of railroading in wintertime, of trains freezing up on sidings, and of having to wade around in the snow with the thermometer at forty below. I'd often swapped yarns with the fellow. He professed keen interest in my stories about mining. Charlie often said he'd like to get into the mining game. It wasn't long before he found a chance to fulfill his wish.

Like many other mining men, I had staked a claim of my own. This was at Eagle Lake, about a hundred miles east of Rat Portage. I talked to Charlie about it and he was enthused. He knew I was planning to move an outfit to Eagle Lake to do some real development. My supplies included a big canoe and a full set of heavy mining tools. Also six men to do the work. The local charge on this movement was about $250.

Such an amount, Charlie told me, was far too much. In exchange for an interest in my claim, he offered to get me moved at a greatly reduced rate. I'd been scheming on how I could manage that anyhow, so the bargain was soon made.

Charlie arranged that I would secretly place my stuff along a designated sidetrack in the Rat Portage yard at the ghostly hour of midnight. A conductor friend of his was running the local that night and was willing to help. He cautioned us to use no lights, to move about quietly, and avoid attracting attention.

WE FOLLOWED instructions. Soon a switchman appeared. He entered the caboose and bumped into the canoe, which reached the full length of the car. Swearing volubly, he released the brakes at each end. Just about that time another yard goat rumbled onto the scene. She picked up our crummy and switched it onto the local train, which had been made up on another track and was ready to go east. Shortly afterward the conductor came in. He lit the lanterns, looked around the caboose in evident surprise,

WE moved cautiously . . . using no lights that might attract notice

and exclaimed in a loud, blustering voice:

"Hell! Charlie told me a friend of his had a few things he wanted to get moved to Eagle Lake, but this is the damnedest imposition I ever heard of! Who's boss of the outfit?"

I can see that fellow yet: big and dark complexioned, with a heavy beard. Feeling cheap, I admitted weakly that I was in charge.

"Well," he snorted, "I guess we're in for it now, but I can't let you off at Eagle Lake with all this plunder. I'd get fired if the station agent saw this layout." He thought a moment. "Tell you what I'll do. We'll stop about a mile this side of the depot, where an arm of the lake runs down almost to the track. You'll have to unload there—and hurry it up, too."

Of course, I agreed. There wasn't much else I could do. After some hesitation I asked what the damages would be, and nearly fainted at his reply: "Do you think that five dollars would be too much?"

I hastened to pay the five before the conductor could change his mind.

When we reached Eagle Lake, we worked like beavers and quickly had everything unloaded. Early next morning we found a big scow, with an old sail, floating in the lake. Piling our freight onto it, we set out for the claim. Upon arriving we pitched camp in the wilderness and set to work.

Charlie and I later made many trips to and from our claim. One day in the Eagle Lake yard we found a string of flat cars loaded with sand. An engine was coupling on to move them west. Quickly we scrambled aboard for a free ride to Rat Portage. Free transportation is all right, but this came near being our last. I hope never to have another ride like it. Why those flats were not boarded up on the sides or why the sand had been loaded on such cars, I

never did learn and probably never will.

A strong west wind was blowing. As the train speed increased, Charlie and I began to gasp for breath in a choking tornado of sand. Both of us were clinging desperately to one slim brake rod. Even that was bent and seemed to bend more as our weight pulled against it. Holding on for dear life, I guess we were both saying prayers. At length the sand quit flying over us, for the reason that the flats were blown clean! We reached Rat Portage nearer dead than alive, with the feeling that we had earned everything we'd ever get from the claim.

Perhaps you'd like to know how we came out on the gold prospect. Well, we sold the claim after we had done a lot of grueling work on it and after I had made a trip all the way to London to talk to the officers of an English firm we were dickering with. Charlie received $8,000 for his share. We have often laughed in recalling the night we moved our outfit from Rat Portage to Eagle Lake.

IN THE summer of 1896 I had an experience that made quite a hit with the local Canadian Pacific men. The railway officials at Rat Portage had received a rush call from an Eastern firm, Auld & Conger, for a mining engineer familiar with hoisting machinery and cables to inspect a hoist in a quarry in the States at Bangor, Pa. The Canadian Pacific superintendent, knowing me well, recommended me for the job.

The order was so unusual that I wired for confirmation. Upon receiving it, I packed my grip and went East on a round-trip pass. I traveled via New York City, where I took the Central Railroad of New Jersey to Bangor, enjoying the scenery enroute. I knew I would go over High Bridge in daylight. This was a slender structure, two hundred and fifteen feet long, spanning a deep gully. It was then one of the highest bridges in the country. I asked the conductor when we would cross it, for I was anxious not to miss the sight. He replied that the trestle was not far beyond High Bridge station; the name showed plainly on the side of the building and all I had to do was keep my eyes open.

Our train stopped at the depot and I was all set for the magnificent view. Soon we started to roll again. Next thing I knew I was hurled violently against the front end of the car with a knot of other men. The engineer had thrown on the emergency. We were a surprised bunch of travelers. Getting up, we ran outside to see what was wrong.

Matter enough—will I ever forget it? Looking back, I saw that the driving wheels had cut all the tie ends for about two hundred feet back of the smoking-car in which I'd been riding. The main driving axles had broken off and the wheels spread out without breaking parallels or connecting rods. Our locomotive had stopped with her pilot sticking out over the dizzy heights of High Bridge!

The trestle had no guard rail. If the train had not been stopped just before it reached the place we all might have gone to glory. Yes, I had a fine view of the great structure, but was in no mood to appreciate it just then. Soon another engine came along, pulled the train away from the bridge, and later took us on to the end of the division. When I arrived in one piece at Bangor, I told the story to the quarry superintendent. He said solemnly:

"Young man, I don't think you'll ever forget High Bridge!"

Sure enough, right now I couldn't tell you what kind of hoist I inspected that day at Bangor, nor anything about the quarry machinery; but the mental picture of that engine with a three-hundred-foot drop below, sticking her nose over the bridge, is as vivid as if it had happened only yesterday.

For some time after that I remained at Rat Portage. Memories of that country in the gold rush days are high spots of my past. I'm now residing at 7600 Euclid Avenue, Cleveland, Ohio, and would like to hear from anyone who lived in the Lake of the Woods country or worked for the Canadian Pacific on that division.

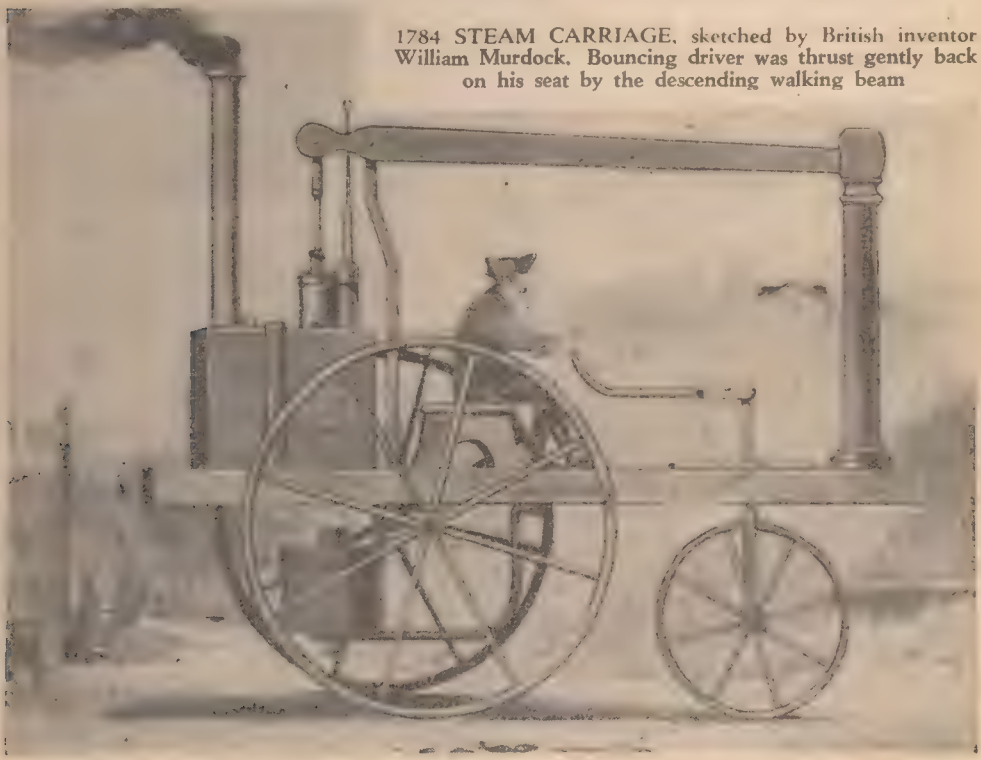
Development of the Locomotive

(Part 1)

1828 JEEP, designed by George W. Johnson, of Baltimore, Md., had a two-wheel drive; fortunately never got past the model stage shown here

Prints on pages 20, 21, 24, and 95 from Milton Bernstein, Chairman Railroadians' Museum Committee

1784 STEAM CARRIAGE, sketched by British inventor William Murdock. Bouncing driver was thrust gently back on his seat by the descending walking beam



All-Time Locomotive Roster of the New York, Ontario & Western

(Part 3)

Number	Class	Type	Builder and Date	Shop Number	Disposition and Date
101 (2nd)	D	B-B*	General Electric, 1941	15028	On active roster
102 (1st)	....	2-6-0	.....	.	Scrapped, 1894
	(Formerly 1st No. 91. Renumbered, 1888)				
102 (2nd)	D	B-B*	General Electric, 1941	15029	On active roster
103 (1st)	K	2-6-0	.....	.	Scrapped, 1905
	(Formerly 1st No. 92. Renumbered, 1888)				
103 (2nd)	D	B-B*	General Electric, 1941	15030	On active roster
104 (1st)	M	2-6-0	Rome, 1889	458	Sold Unadilla Val., 1915
104 (2nd)	D	B-B	General Electric, 1942	15031	On active roster
105 (1st)	M	2-6-0	Rome, 1889	459	Sold (scrap), 1929
105 (2nd)	D	B-B	General Electric, 1942	15032	On active roster
106	M	2-6-0	Rome, 1889	562	Sold (scrap), 1929
107	M	2-6-0	Rome, 1889	563	Sold (scrap), 1929
108	M	2-6-0	Rome, 1889	564	Retired, 1932
109	M	2-6-0	Rome, 1890	565	Sold M&URR, 1916
110	M	2-6-0	Rome, 1890	566	Scrapped, 1929
111 (1st)	R	2-6-0	Dickson, 1890	709	Changed to 1st No. 211
111 (2nd)	M	2-6-0	Rome, 1890	567	Scrapped, 1932
112–114	*(These numbers were never filled)*				
115	J	2-6-0	Cooke, 1898 (rebuilt)	...	Scrapped, 1915
	(Formerly 2nd No. 53)				
116	J	2-6-0	Cooke, 1898 (rebuilt)	.	Scrapped, 1917
	(Formerly No. 63)				
117	J	2-6-0	Rome, 1902 (rebuilt)	.	Dropped, 1913
	(Formerly No. 59)				
118	J	2-6-0	Rome, 1902 (rebuilt)	.	Scrapped, 1915
	(Formerly 2nd No. 55)				
119	J	2-6-0	Rome, 1902 (rebuilt)	.	Scrapped, 1908
	(Formerly No. 61)				
120	J	2-6-0	Rome, 1902 (rebuilt)		Scrapped, 1917
	(Formerly No. 62)				
121	J	2-6-0	Rome, 1902 (rebuilt)	...	Destroyed (scrapped?), 1913
	(Formerly No. 64)				
122–125	*(These numbers were never filled)*				
126	R	2-6-0	Dickson, 1890	763	Sold, 1923
127	R	2-6-0	Dickson, 1890	764	Sold, 1917
128	R	2-6-0	Dickson, 1890	765	Sold, 1917
129	R	2-6-0	Dickson, 1890	766	Sold, 1918
130	R	2-6-0	Dickson, 1890	767	Sold (scrap), 1929
131	R	2-6-0	Dickson, 1890	768	Scrapped, 1935
	(Blew up, 1909. Rebuilt at Middletown)				
132	R	2-6-0	Dickson, 1890	769	Sold (scrap), 1929
133	R	2-6-0	Dickson, 1890	770	Sold, 1923
134	R	2-6-0	Dickson, 1890	771	Sold, 1923
135	R	2-6-0	Dickson, 1890	772	Retired, 1925
136	R	2-6-0	.....	709	Scrapped, 1917
	(Formerly 1st No. 211. Renumbered, 1890)				
137	Q	2-6-0	Dickson, 1892	819	Sold, 1915
	(Lump burner)				
138	Q	2-6-0	Dickson, 1892	820	Sold, 1916
	(Lump burner)				
139	T	2-6-0	Dickson, 1893	897	Scrapped, 1935
140	T	2-6-0	Dickson, 1893	904	Scrapped, 1935
141	T	2-6-0	Dickson, 1893	905	Scrapped, 1935
142	T	2-6-0	Dickson, 1893	906	Scrapped, 1935
143	U	2-6-0	Cooke, 1901	2645	Wrecked, 1902. Rebuilt as No. 148
144	U	2-6-0	Dickson, 1901	1218	Wrecked, 1902. Rebuilt as No. 149
145	*(This number was never filled)*				

Photo by Karl E. Schlachter

ONE of the O&W's famous Dickson "hogs." Following a wreck which necessitated extensive repairs she was equipped with a double firebox

Number	Class	Type	Builder and Date	Shop Number	Disposition and Date
146	U	2-6-0	Alco (Cooke), 1903	27493	Changed to No. 246
147	U	2-6-0	Alco (Cooke), 1903	27492	Changed to No. 247
148	U	2-6-0	Rome, 1903 (rebuilt)	.....	Changed to No. 248
	(Formerly No. 143)				
149	U	2-6-0	Rome, 1903 (rebuilt)	.....	Changed to No. 249
	(Formerly No. 144)				
150	*(This number was never filled)*				
151	S	2-8-0	Dickson, 1890	773	Scrapped, 1918
152	S	2-8-0	Dickson, 1890	774	Scrapped, 1914
153	S	2-8-0	Dickson, 1890	775	Sold, 1925
154	S	2-8-0	Dickson, 1890	776	Scrapped, 1925
155	S	2-8-0	Dickson, 1890	777	Sold, 1925
156	S	2-8-0	Dickson, 1890	778	Scrapped, 1924
157	S	2-8-0	Dickson, 1890	779	Retired, 1937
158	S	2-8-0	Dickson, 1890	780	Sold (scrap), 1929
159	S	2-8-0	Dickson, 1890	781	Sold (scrap), 1929
160	S	2-8-0	Dickson, 1890	782	Scrapped, 1916
161	S	2-8-0	Dickson, 1890	783	Retired, 1932
162	S	2-8-0	Dickson, 1890	784	Retired, 1933
163	S	2-8-0	Dickson, 1891	785	Sold (scrap), 1929
164	S	2-8-0	Dickson, 1891	786	Sold, 1923
165	S	2-8-0	Dickson, 1891	787	Retired, 1932
166	S	2-8-0	Dickson, 1892	873	Retired, 1932
167	S	2-8-0	Dickson, 1892	874	Sold, 1923
168	S	2-8-0	Dickson, 1892	875	Scrapped, 1913
169	S	2-8-0	Dickson, 1892	876	Scrapped, 1923
170	S	2-8-0	Dickson, 1892	877	Scrapped, 1918
171	S	2-8-0	Dickson, 1892	878	Sold, 1925
172	S	2-8-0	Dickson, 1892	879	Sold, 1923
173	S	2-8-0	Dickson, 1892	880	Sold, 1925
174	S	2-8-0	Dickson, 1892	881	Retired, 1932
175	S	2-8-0	Dickson, 1892	882	Scrapped, 1925
176	S	2-8-0	Dickson, 1892	883	Retired, 1925
177	S	2-8-0	Dickson, 1892	884	Retired, 1932
178	S	2-8-0	Dickson, 1892	885	Retired, 1932
179	S	2-8-0	Dickson, 1892	886	Retired, 1932
180	S	2-8-0	Dickson, 1892	887	Sold, 1923
181	S	2-8-0	Dickson, 1893	898	Retired, 1932
	(Blew up, 1895. Rebuilt by Cooke, 1896)				
182	S	2-8-0	Dickson, 1893	899	Retired, 1932
183	S	2-8-0	Dickson, 1893	900	Retired, 1932
184	S	2-8-0	Dickson, 1893	901	Sold, 1925
185	S	2-8-0	Dickson, 1893	902	Retired, 1933
186	S	2-8-0	Dickson, 1893	903	Retired, 1932
187	S	2-8-0	Dickson, 1893 (del'd., 1894)	907	Retired, 1932
188	S	2-8-0	Dickson, 1893 (del'd., 1894)	908	Scrapped, 1929
189	S	2-8-0	Cooke, 1899 (rebuilt)	..	Scrapped, 1918
	(Formerly 2nd No. 90)				
190	S	2-8-0	Rome, 1897 (rebuilt)	..	Retired, 1932
	(Formerly on Erie. NYO&W bought wheels and frame after she blew up)				
191	S	2-8-0	Dickson, 1893 (del'd., 1896)	911	Retired, 1932
192	S	2-8-0	Dickson, 1893 (del'd 1896)	912	Sold, 1923
193–200	*(These numbers were never filled)*				
201	P	2-8-0	Cooke, 1900	2509	On active roster

Number	Class	Type	Builder and Date	Shop Number	Disposition and Date
202	P	2–8–0	Cooke, 1900	2566	On active roster
203	P	2–8–0	Cooke, 1900	2567	On active roster
204	P	2–8–0	Cooke, 1900	2568	Retired, 1943
205	P	2–8–0	Cooke, 1901	2646	On active roster
206	P	2–8–0	Cooke, 1901	2647	Scrapped, 1936
207	P	2–8–0	Cooke, 1901	2648	On active roster
208	P	2–8–0	Cooke, 1901	2649	On active roster
209	P	2–8–0	Cooke, 1901	2650	On active roster
210	P	2–8–0	Cooke, 1901	2651	On active roster
211 (1st)	R	2–6–0	.....	....	Changed to No. 136
	(Formerly 1st No. 111. Renumbered, 1890)				
211 (2nd)	P	2–8–0	Cooke, 1901	2710	Retired, 1942
212	P	2–8–0	Cooke, 1901	2711	Scrapped, 1937
213	P	2–8–0	Cooke, 1901	2712	On active roster
214	P	2–8–0	Cooke, 1901	2713	Retired, 1942
215	P	2–8–0	Alco (Cooke), 1902	26242	Retired, 1942
216	P	2–8–0	Alco (Cooke), 1902	26243	On active roster
217	P	2–8–0	Alco (Cooke), 1902	26244	On active roster
218	P	2–8–0	Alco (Cooke), 1903	29286	On active roster
219	P	2–8–0	Alco (Cooke), 1903	29287	Retired, 1942
220	P	2–8–0	Alco (Cooke), 1903	29288	On active roster
221–224	*(These numbers were never filled)*				
225	E	4–6–0	Alco (Brooks), 1911	50035	On active roster
226	E	4–6–0	Alco (Brooks), 1911	50036	On active roster
227	E	4–6–0	Alco (Brooks), 1911	50037	On active roster
228	E	4–6–0	Alco (Brooks), 1911	50038	On active roster
229–239	*(These numbers were never filled)*				
240	U	2–6–0	Alco (Cooke), 1905	30446	Retired, 1937
241	U	2–6–0	Alco (Cooke), 1905	30447	Retired, 1937
	(Changed to 4–6–0, same number, class U-1, 1920)				
242	U	2–6–0	Alco (Cooke), 1905	30448	Scrapped, 1940
243	U	2–6–0	Alco (Cooke), 1904	29283	Retired, 1937
244	U	2–6–0	Alco (Cooke), 1904	29284	On active roster
	(Changed to 4–6–0, same number, class U-1, 1917)				
245	U	2–6–0	Alco (Cooke), 1904	29285	On active roster
	(Changed to 4–6–0, same number, class U-1, 1924)				
246	U	2–6–0	.....	.....	On active roster
	(Formerly No. 146. Renumbered, 1904. Changed to 4–6–0, class U-1, 1917)				
247	U	2–6–0	.....	.....	Retired, 1937
	(Formerly No. 147. Renumbered, 1904)				
248	U	2–6–0	.....	.....	Scrapped, 1935
	(Formerly No. 148. Renumbered, 1904)				
249	U	2–6–0	.....	.....	Retired, 1936
	(Formerly No. 149. Renumbered, 1904. Changed to 4–6–0, class U-1, 1917)				
250	U	2–6–0	Alco (Cooke), 1905	30449	Retired, 1941
	(Changed to 4–6–0, class U-1, 1919)				
251	U	2–6–0	Alco (Cooke), 1907	38971	Retired, 1941
	(Changed to 4–6–0, class U-1, 1916)				
252	U	2–6–0	Alco (Cooke), 1907	38972	Retired, 1937
253	U	2–6–0	Alco (Cooke), 1907	38973	Retired, 1941
	(Changed to 4–6–0, class U-1, 1923)				
254	U	2–6–0	Alco (Cooke), 1907	38974	Retired, 1942
255	U	2–6–0	Alco (Cooke), 1907	38975	On active roster

OLD post-card view of Mogul 250. Side steps to pilot deck were characteristic of early O&W camelbacks

Photo from A. L. Weeden, Norwich, N. Y.

WORK-HORSES of the road are slim-barreled ten-wheelers like the 227. They haul freight or varnish, as the occasion demands

Number	Class	Type	Builder and Date	Shop Number	Disposition and Date
256	U	2–6–0	Alco (Cooke), 1907	38976	Retired, 1941
	(Changed to 4–6–0, class U-1, 1917)				
257–270	*(These numbers were never filled)*				
271	V	2–6–0	Alco (Cooke), 1908	45420	On active roster
272	V	2–6–0	Alco (Cooke), 1908	45421	Sold to Unadilla Val., 1941
273	V	2–6–0	Alco (Cooke), 1908	45422	On active roster
274	V	2–6–0	Alco (Cooke), 1908	45423	Retired, 1941
275	V	2–6–0	Alco (Cooke), 1908	45660	Retired, 1941
276	V	2–6–0	Alco (Cooke), 1908	45661	Scrapped, 1940
277	V	2–6–0	Alco (Cooke), 1908	45662	On active roster
278	V	2–6–0	Alco (Cooke), 1908	45663	On active roster
279	V	2–6–0	Alco (Cooke), 1908	45664	Retired, 1941
280	V	2–6–0	Alco (Cooke), 1908	45665	Retired, 1941
281	V	2–6–0	Alco (Cooke), 1909	45841	Retired, 1942
282	V	2–6–0	Alco (Cooke), 1909	45842	Retired, 1942
283	V	2–6–0	Alco (Cooke), 1909	45843	Scrapped, 1938
284	V	2–6–0	Alco (Cooke), 1909	45844	On active roster
285	V	2–6–0	.....	45424	Scrapped, 1940
	(Formerly 2nd No. 100. Renumbered, 1909)				
286–300	*(These numbers were never filled)*				
301	W	2–8–0	Alco (Cooke), 1910	48137	On active roster
302	W**	2–8–0	Alco (Cooke), 1910	48138	On active roster
303	W**	2–8–0	Alco (Cooke), 1910	48139	On active roster
304	W**	2–8–0	Alco (Cooke), 1910	48140	On active roster
305	W**	2–8–0	Alco (Cooke), 1910	48141	On active roster
306	W**	2–8–0	Alco (Cooke), 1910	48142	On active roster
307	W**	2–8–0	Alco (Cooke), 1910	48355	On active roster
308	W**	2–8–0	Alco (Cooke), 1910	48356	On active roster
309	W	2–8–0	Alco (Cooke), 1910	48357	On active roster
310	W**	2–8–0	Alco (Cooke), 1910	48358	On active roster
311	W**	2–8–0	Alco (Cooke), 1910	48359	On active roster
312	W	2–8–0	Alco (Cooke), 1910	48360	On active roster
313	W	2–8–0	Alco (Cooke), 1910	48362	On active roster
314	W	2–8–0	Alco (Cooke), 1910	48363	On active roster
315	W**	2–8–0	Alco (Cooke), 1911	49410	On active roster
316	W	2–8–0	Alco (Cooke), 1911	49411	On active roster
317	W	2–8–0	Alco (Cooke), 1911	49412	On active roster
318	W	2–8–0	Alco (Cooke), 1911	49413	On active roster
319	W	2–8–0	Alco (Cooke), 1911	49414	On active roster
320	W	2–8–0	Alco (Cooke), 1911	49415	On active roster
321	W	2–8–0	Alco (Cooke), 1911	49704	On active roster
322	W	2–8–0	Alco (Cooke), 1911	49705	On active roster
323	W	2–8–0	Alco (Cooke), 1911	49706	On active roster
324	W	2–8–0	Alco (Cooke), 1911	49707	On active roster
325	W	2–8–0	Alco (Cooke), 1911	49708	On active roster
326	W	2–8–0	Alco (Cooke), 1911	49709	On active roster
327–350	*(These numbers were never filled)*				
351	X	2–10–2	Alco (Schenectady), 1915	55268	On active roster
352	X	2–10–2	Alco (Schenectady), 1915	55269	On active roster
353	X	2–10–2	Alco (Schenectady), 1915	55270	On active roster
354	X	2–10–2	Alco (Schenectady), 1915	55271	On active roster
355	X-1†	2–10–2	Alco (Schenectady), 1915	55272	Retired, 1941
356	X	2–10–2	Alco (Schenectady), 1915	55273	On active roster

Number	Class	Type	Builder and Date	Shop Number	Disposition and Date
357	X	2–10–2	Alco (Schenectady), 1915	55274	Scrapped, 1940
358	X	2–10–2	Alco (Schenectady), 1915	55275	On active roster
359	X	2–10–2	Alco (Schenectady), 1915	55276	On active roster
360	X	2–10–2	Alco (Schenectady), 1915	55277	On active roster
361	X	2–10–2	Alco (Schenectady), 1915	55278	On active roster
362	X	2–10–2	Alco (Schenectady), 1915	55279	Retired, 1941
363–400	*(These numbers were never filled)*				
401	Y†	4–8–2	Alco (Schenectady), 1922	63254	On active roster
402	Y-1‡	4–8–2	Alco (Schenectady), 1922	63255	On active roster
403	Y†	4–8–2	Alco (Schenectady), 1922	63256	On active roster
404	Y†	4–8–2	Alco (Schenectady), 1922	63257	On active roster
405	Y†	4–8–2	Alco (Schenectady), 1923	64735	On active roster
406	Y	4–8–2	Alco (Schenectady), 1923	64736	On active roster
407	Y	4–8–2	Alco (Schenectady), 1923	64737	On active roster
408	Y	4–8–2	Alco (Schenectady), 1923	64738	On active roster
409	Y	4–8–2	Alco (Schenectady), 1923	64739	On active roster
410	W	4–8–2	Alco (Schenectady), 1923	64740	On active roster
411–450	*(These numbers were never filled)*				
451	Y-2‡	4–8–2	Alco (Schenectady), 1919	67986	On active roster
452	Y-2‡	4–8–2	Alco (Schenectady), 1929	67987	On active roster
453	Y-2‡	4–8–2	Alco (Schenectady), 1929	67988	On active roster
454	Y-2‡	4–8–2	Alco (Schenectady), 1929	67989	On active roster
455	Y-2‡	4–8–2	Alco (Schenectady), 1929	67990	On active roster
456	Y-2‡	4–8–2	Alco (Schenectady), 1929	67991	On active roster
457	Y-2‡	4–8–2	Alco (Schenectady), 1929	67992	On active roster
458	Y-2‡	4–8–2	Alco (Schenectady), 1929	67993	On active roster
459	Y-2‡	4–8–2	Alco (Schenectady), 1929	67994	On active roster
460	Y-2‡	4–8–2	Alco (Schenectady), 1929	67995	On active roster

**Diesel-Electric.*
***Altered in NYO&W shops (weight transferred from drivers). Now class W-2. ‡Equipped with booster.*
†Large tanks from scrapped class X locomotives installed. Now known as class Ya, except for No. 402, which is still class Y-1.

Photo by Gerald Best, 511 Sierra Drive, Beverly Hills, Calif.

HEAVIEST engines on the line are X Class Santa Fes. Originally the 351 had an 8,000 gallon tank

Locomotives Obtained by the New York & Oswego Midland
(including the New Jersey Midland)

Type	Numbers	Drivers	Cylinders	Weight of Locomotive
0–4–0	21, 22, 23*, 27	52	15x22	54,000
0–4–0	20*, 46	54¾	15x22	68,000
4–4–0	28*, 38	56¾	12x22	48,000
4–4–0	28	60	14x22	54,000
4–4–0	13, 14	60	14x22	56,000
4–4–0	75	56	16x24	60,000
4–4–0	76	66	16x24	60,000
4–4–0	77	66	16x22	60,000
4–4–0	25*, 26*, 27*, 65**, 66*, 67*, 69*, 80–90	56	17x24	64,000
4–4–0	10, 11, 12	60	17x20	64,000
4–4–0	1–9, 15–18	60	17x22	64,000
4–4–0	29–32, 34, 36, 37, 40	61¾	17x22	72,000
4–4–0	28**, 33*, 35, 39, 41, 42, 43*, 44, 54–56	61¾	17x24	72,000
4–4–0	72, 73, 74, 79*	54	16x24	....
4–4–0	69	60	16x24	....
4–4–0	70, 71	66	17x24	....
2–6–0	19, 20, 25, 26	54	16x24	72,000
2–6–0	23, 24, 48*, 49*, 68, 68*, 78, 78*, 79	54	17x24	72,000
2–6–0	33, 43, 45, 47, 49–52, 53*–56*, 57–64	54	17x24	74,000
2–6–0	91–101	48	18x26	74,000

**Second use of number. **Third use of number.*

AMONG the most handsome 4-8-2s in the east are the Ontario & Western's Y Class engines. Stiff Catskill grades necessitated the auxiliary sanddome carried by the 445

Locomotives Obtained by the New York, Ontario & Western

Type	Class	Remarks	Drivers	Cylinders	Weight of Locomotive
4-4-0	F	.....	56	17x24	54,000
4-4-0	Old D	Rebuilt.....	..	.....	.....
4-4-0	C	Rebuilt; Mother Hubbards.....	..	.....	.....
4-4-0	B (1-2)	Mother Hubbards.....	68	17x24	80,000
4-4-0	B (3-4)	Rebuilt; Mother Hubbards.....	..	.....	.....
4-4-0	H	.....	69	18x24	80,000
4-4-0	G	.....	69	18x24	82,000
4-4-0	A (20-21)	.....	68	18x28	91,000
4-4-0	A (22-24)	.....	68	18x28	94,000
0-6-0	L	Mother Hubbards.....	51	20½x26	156,000
0-6-0	L	Rebuilt; Mother Hubbards.....	51	20½x26	156,000
2-6-0	J	Rebuilt; Mother Hubbards.....	..	.....	.....
2-6-0	K	.....	48	18x26	74,000
2-6-0	Q	.....	50	18x24	98,000
2-6-0	R	Mother Hubbards.....	56	19x24	103,000
2-6-0	M	.....	62	19x24	112,000
2-6-0	T	Mother Hubbards.....	62	19x28	119,000
2-6-0	U	Mother Hubbards.....	69	19½x28	138,000
2-6-0	I (30-39)	.....	63	20x26	143,000
2-6-0	I (40-44)	.....	63	20x26	140,000
2-6-0	V	Mother Hubbards.....	63	20x28	150,000
4-6-0	E	.....	69	21x26	134,000
4-6-0	U-1	Mother Hubbards.....	69	19½x28	142,000
4-6-0	I-1	.....	63	20x26	148,000
2-8-0	O	.....	50	20x24	102,000
2-8-0	N	.....	50	20x24	105,000
2-8-0	S (151-188, 191, 192)	Mother Hubbards.....	50	20x24	116,000
2-8-0	S (189)	Rebuilt; Mother Hubbards.....	..	.....	.....
2-8-0	S (190)	Rebuilt; Mother Hubbards.....	..	.....	.....
2-8-0	S (189)	.....	..	.....	.....
2-8-0	S (190)	Rebuilt.....	..	.....	.....
2-8-0	P	Mother Hubbards.....	55	21x32	178,000
2-8-0	W	.....	55	21x32	182,000
4-8-2	Y (and Y-1)	.....	69	27x28	208,000
4-8-2	Y-2	.....	69	27x30	239,500
2-10-2	X (and X-1)	.....	57	28x32	293,000

NEXT MONTH: History and current locomotive roster of the Minneapolis, Northfield & Southern Railway

Georgia Short Line

Lumber Keeps One Train per Day Running on the Old Talbotton Railroad

By H. G. MONROE

Photos by Walter Sparks

IT'S LESS THAN eight miles long and it winds a leisurely course through piney woods and rich farm lands in middle-western Georgia. I refer to the Talbotton Railroad, a typical short line of the old South. The road operates a train a day, except Sunday, in each direction between Talbotton, county seat of some 1175 souls, and Junction City, where the standard-gage midget connects with a big brother, the Central of Georgia Railway.

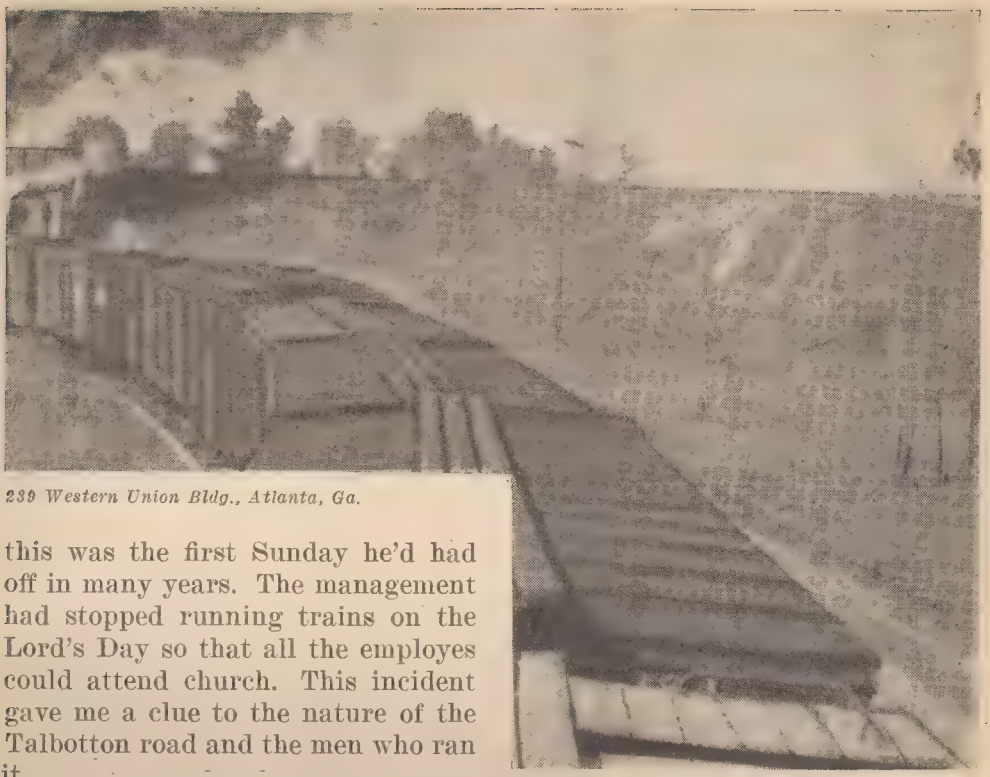
PRESIDENT of the Talbotton Railroad: Gus Persons

The town of Talbotton nestles on a sunny slope of Pine Mountain. It is located 91 miles from the state capital, in which I make a livelihood by writing rail features for the *Atlanta Journal,* and 20 miles from President Roosevelt's "Little White House" at Warm Springs.

Another railroad—the 640-mile Atlanta, Birmingham & Coast—passes through the drowsy town and parallels the short line southward so far as Junction City. There is friendly rivalry between employes of the two roads, whose county-seat depots are diagonally across the street from each other.

Spring was in the air one quiet Sunday afternoon, years ago, when I first drifted down to Talbotton to look around. I saw a heavy, smiling, blue-eyed Irishman in the courthouse square with a small group of fellow citizens. This man, I learned, was Andrew Jackson Greathouse, better known as Mike. He was dressed conspicuously in his Sabbath best. The suit was brand new, the shoes shone like mirrors, and a broad-brimmed hat shaded the massive shoulders. A huge chain, with a buckeye charm, swung across the vest to a pocket bulging with a watch.

It was plain even to me, as it must have been to everyone else, that Mike was celebrating something. Inquiry revealed that he'd gone to church with his wife in the morning and now had the afternoon to himself. Mike seemed to be well satisfied with the world; and indeed he might be, for Mike was a locomotive engineer on the Talbotton Railroad and



239 Western Union Bldg., Atlanta, Ga.

this was the first Sunday he'd had off in many years. The management had stopped running trains on the Lord's Day so that all the employes could attend church. This incident gave me a clue to the nature of the Talbotton road and the men who ran it.

The Talbotton Railroad, which harks back to 1872, is in the peculiar position today of both losing and gaining from the present war. While the OPA took away gasoline shipments, a large factor in the Talbotton's freight business, the increased demand for lumber to build Army camps, housing projects and the like has saved the line from financial collapse. But when the lumber supply is eventually sawed out or the prices fall again, after the war, the little railroad will have a hard struggle to keep going. Whether or not it will survive permanently, I cannot say.

Being on the edge of a section where the stately long-leaf pines formerly kept hundreds of great mills sawing timber, the town of Talbotton had the twofold advantage of a prosperous farming section to the north and the lumber industry to the

TALBOTTON traffic rolls under the AB&C near Paschal, Ga.

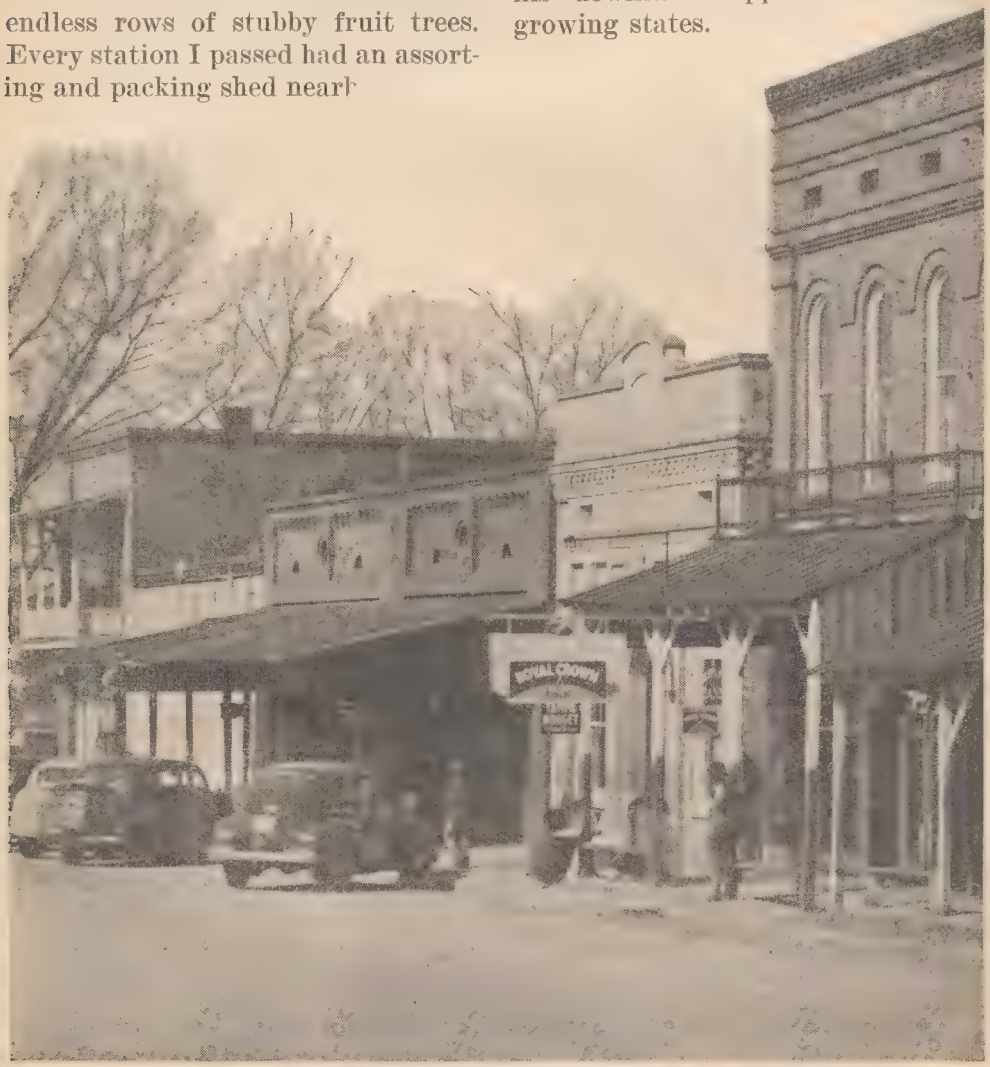
south. But the virgin forests were ruthlessly cut over, with no regard to seedlings for future growth. Scrubby blackjack oaks now stand where arrow-straight pines reared their heads two and three hundred feet. Thousands of board feet of lumber, without a blemish, were sawed from a single tree. Portions of trees, from which mill owners would be very glad to saw lumber today, were fuel for fires that burned day and night at the sawmills.

Riding an AB&C train southward the other day through the foothills to reach Talbotton, I saw oaks, maples and sweet gums rapidly give way to the short-leaf pines. Most of the area has been cut over. Few large trees are left, although young

pines line the railroad as far as you can see.

The country through which the AB&C passes is sparsely settled between stations. Much of the farming land has grown up with pine thickets since the boll weevil invaded Georgia, but occasionally you spot a lonely tenant cabin in a clearing. The engine's whistle often reverberates through swamps. Forty miles south of Atlanta, however, the line penetrates the famous Georgia peach belt, where the rolling hills on each side of the railroad are dotted with endless rows of stubby fruit trees. Every station I passed had an assorting and packing shed near

THOUGH lumber is now the lifeblood of the Talbotton Railroad, this product had nothing to do with building the 7½-mile line. The early settlers had been attracted by the fertile red loam in that section. They were, for the most part, prosperous cotton and corn planters. Cotton was the money crop, the only security for yearly operating loans from the banks and ration credit with the merchants. For years, until the boll weevil looted the crop in the early 1920's, King Cotton ruled the South; his downfall crippled the cotton-growing states.



Old-timers recall when Talbotton was almost barricaded by stacks of cotton bales and loaded farm wagons. Ten thousand bales often passed through the town, and money flowed freely as the planters and tenant farmers paid off their yearly accounts. Hauling was a lucrative business in the days before the steam horse. Large fortunes were invested in the wagon trains. Naturally, when talk of building railroads reached Talbotton a hundred years ago, the owners of stagecoach lines and wagon trains vigorously fought the venture.

The Southwestern Railroad (now the leased Macon-Columbus Division of the Central of Georgia Railway) was chartered in 1845 to build steam lines from Macon to Columbus, Americus, Albany and other points in South Georgia. Its promoters de-

TALBOTTON'S Courthouse Square, far from bustling big cities, reflects the leisurely flow of life in rural Georgia. Benches and sheetmetal awnings are a public service

VENERABLE church, a Talbotton landmark, was built in 1851 by slaves of large land-owners

sired to run the Columbus branch through Talbotton. However, big plantation owners, not caring to have their lands divided by the railroad, and influenced by rival transportation interests, refused to grant rights-of-way to the railroad. As a result, the line was built through an unproductive sandy stretch south of Talbotton.

Shortly after the Civil War a prominent Virginian named Henry Persons bought a large tract of Georgia land in Talbot County and moved his family to Talbotton. Mr. Persons was distinguished as a Confederate Army captain, a planter and a Congressman. He reared four sons and four daughters. I mention this family because two of the boys and an unmarried daughter became owners of the Talbotton Railroad.

The daughter, Miss Virginia G. Persons, was one of the few women presidents of American railroad companies. The two sons, Thomas H. and Augustus P., bought controlling stock in the road in 1905. Tom held the presidency until his death in 1929. Virginia succeeded him and served until her life ended about three years ago. Raiford Persons, a son of Tom, was her General Manager. When he died in 1937, Augustus P. Persons, Jr., took over the reins and is today President and General Manager of the road.

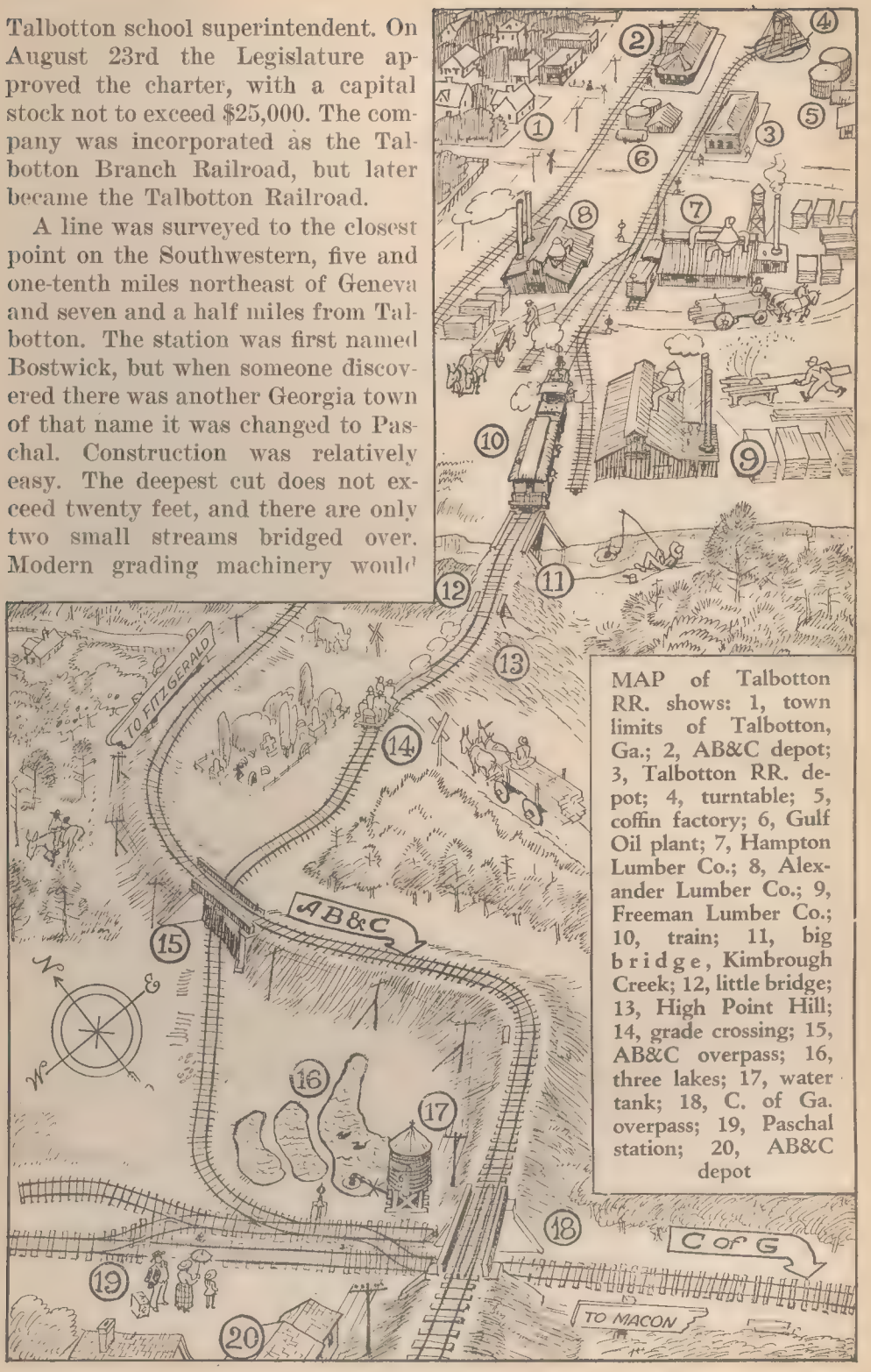
I was interested to learn, on one of my visits to the locality, that a future celebrity named Nathan Straus had fled to Talbotton from persecution in Germany—it wasn't Nazi-land in those days, but racial persecution existed just the same. Mr. Straus later moved to New York City, where he and his sons founded Macy's, one of the world's largest department stores.

JEALOUS of the thriving towns that were springing up along the route of the Southwestern Railroad and alarmed because so many local business men were selling out to locate on the Southwestern, the residents of Talbotton came to a belated realization that they had made a grievous mistake in opposing the construction of an iron trail through their community.

In 1872 a group of prominent citizens set about organizing a local railroad. This group included W. A. Little and Thomas N. Gibson, cotton growers, and Ossion D. Gorman,

Talbotton school superintendent. On August 23rd the Legislature approved the charter, with a capital stock not to exceed $25,000. The company was incorporated as the Talbotton Branch Railroad, but later became the Talbotton Railroad.

A line was surveyed to the closest point on the Southwestern, five and one-tenth miles northeast of Geneva and seven and a half miles from Talbotton. The station was first named Bostwick, but when someone discovered there was another Georgia town of that name it was changed to Paschal. Construction was relatively easy. The deepest cut does not exceed twenty feet, and there are only two small streams bridged over. Modern grading machinery would



MAP of Talbotton RR. shows: 1, town limits of Talbotton, Ga.; 2, AB&C depot; 3, Talbotton RR. depot; 4, turntable; 5, coffin factory; 6, Gulf Oil plant; 7, Hampton Lumber Co.; 8, Alexander Lumber Co.; 9, Freeman Lumber Co.; 10, train; 11, big bridge, Kimbrough Creek; 12, little bridge; 13, High Point Hill; 14, grade crossing; 15, AB&C overpass; 16, three lakes; 17, water tank; 18, C. of Ga. overpass; 19, Paschal station; 20, AB&C depot

complete such a job in short order; but in those days, with crude equipment, it took nine years to grade and complete the railroad.

Using wheelbarrows, picks and shovels, the graders followed ridges to avoid fills. Funds often gave out. Grading then stopped until additional money could be found. When at length the line was finished in 1881, with roughly-cut pine ties under 60-pound rails, it was as crooked as a blacksnake. There were two mile-long hills whose steepest grades exceed two per cent. The hardest grade, however, is the quarter-mile climb from the Hampton Lumber Company into Talbotton.

Thomas Gibson and Captain Seaborn W. Thornton were the first officers of the railroad, which thrived from the day it began operation. The early passenger cars were two little red, four-wheeled streetcars. I asked Engineer Greathouse about them.

"They had split-bottom side seats," Mike recalled. "I helped to junk them after I came to the railroad. During the days of prohibition folks were allowed two quarts of whisky

OLD turntable is no longer in use, but Engineer Greathouse and Brakeman Hodges haven't forgotten how it operates

BALDWIN ten-wheeler 240 was borrowed by Talbotton RR. from the Central of Georgia

NOTE small windows in this obsolete passenger coach, built about 90 years ago, and now used by Mr. and Mrs. Greathouse as a tool bin and chicken coop

each month, but we hauled a lot of liquor. When the little dummy cars trailed the freight cars into Talbotton, it was a common saying, 'There goes a car of liquor and a car of passengers.' The shipments meant a lot of money to the railroad; but Tom Persons and Old Man Stevenson, who was agent at the time, were hardheaded prohibitionists and raised the dickens about bootlegging."

The dummy coaches remained in service until along in 1910, I learned from Mike. A second-hand passenger coach was bought from the Georgia Car & Locomotive Works in Atlanta.

"Raiford Persons went after it," said Mike. "He later told me the $2,200 check was the largest he'd ever given. The coach was quite elegant. I understand it had been built for a New York railroad. That must have been in the late Sixties or early Seventies, as the cypress sides below the windows were boarded up and stripped like a plank house. The window shades were slatted wooden shutters that could be raised like the windows. It was lighted with kerosene lamps."

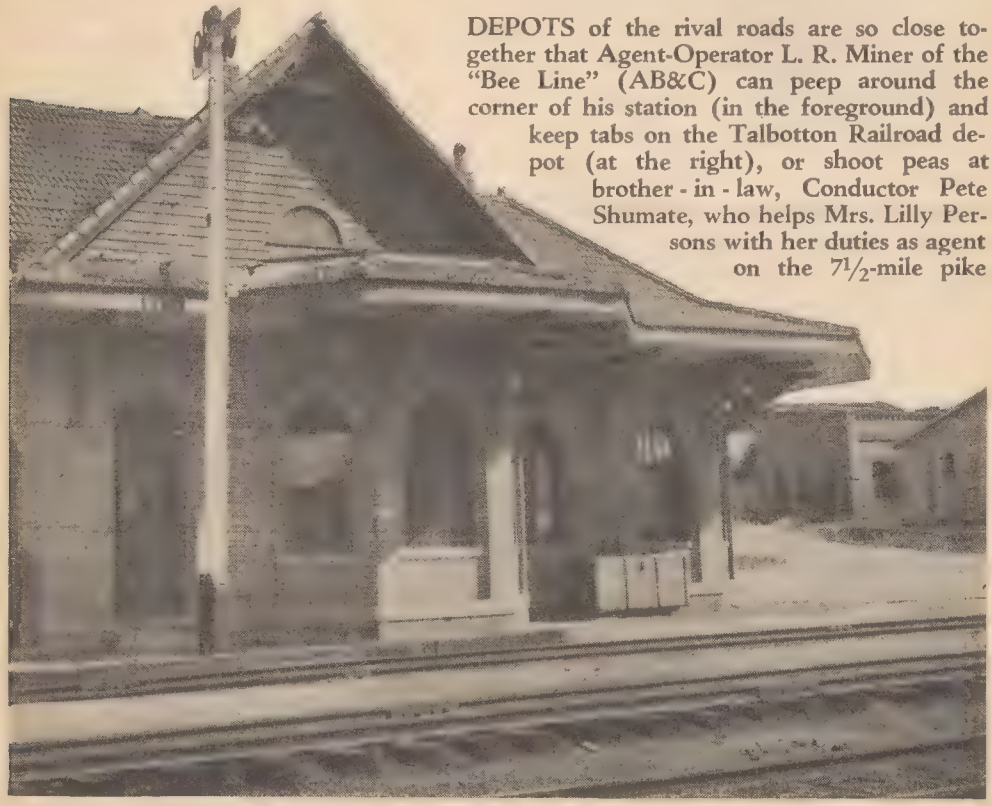
After Tom Persons had bought the road's present coach from the Central of Georgia Railway in 1928, he gave Mike the old coach to use as a den. The engineer moved it across the street into the yard beside his home, repaired the thing and applied two coats of white paint—all of which cost him not more than four dollars and a half, he informed me proudly. During the process of moving, however, the railroad was blocked and the little train failed to make her daily trip to Junction City.

Reminiscing further, Mike said: "John Waddell, one of the road's early engineers, had a wife almost as big as I am. She must have been jealous or something, for she rode the engine with John on nearly every trip—and he made two trips a day. His fireman, Dave Lawson, told me with a little chuckle that she took up so much room in the tiny four-spot, he could hardly do his work."

GETTING back to history: After the Talbotton Railroad had been completed, the county seat began to prosper, while the rival town of Geneva, on the Southwestern, died almost overnight. In 1885 Tom and Gus Persons established a general store and helped to organize a bank, of which Tom became president and Gus cashier.

Meanwhile, the railroad had obtained a mail contract and was operating two trains each way, daily and Sunday. One left in the morning to make connection with the mail trains of the Central, which had leased the Southwestern. The other pulled out at 12:30 p.m. to meet the afternoon trains. Many passengers were hauled in both directions. Three blasts of the engine whistle warned Talbotton that it was fifteen minutes until leaving time. Fare was thirty cents each way.

Cotton crops were good, bringing top prices, and the railroad was hard put to handle its portion of the 10,000 bales grown in the county. But along in 1905 the stockholders became alarmed when surveyers came through Talbotton seeking a route



DEPOTS of the rival roads are so close together that Agent-Operator L. R. Miner of the "Bee Line" (AB&C) can peep around the corner of his station (in the foreground) and keep tabs on the Talbotton Railroad depot (at the right), or shoot peas at brother-in-law, Conductor Pete Shumate, who helps Mrs. Lilly Persons with her duties as agent on the 7½-mile pike

for the Atlanta, Birmingham & Atlantic Railroad (later AB&C).

"It will kill our road," the stockholders said dismally. All agreed with them when they learned that the line would parallel their tracks to a point short of Paschal, where it planned to bridge over their track in a sweeping left-hand curve before swinging to the right in a tangent to make a similar crossing over the Central, northeast of Paschal.

To anyone it would seem that the local railroad was doomed. No doubt many obstacles were thrown in the path of the new one. But H. M. Atkinson, promoter of the AB&A, went right along with his grading and in due time acquired rights-of-way through Talbotton. It was indeed a glum crowd of stockholders who met to decide the fate of the Talbotton Railroad.

But Tom and Gus Persons, now successful merchants and bankers, as well as large land-holders, saw a possibility of continuing operation of the railroad in spite of the competition from the Class One carrier. They knew little about railroading, but their old Uncle Tucker was running an engine on the Central. So they talked it over with "Tuck." The hogger thought so much of the idea that he gave up his job to become engineer and General Superintendent of his nephews' railroad, and they bought controlling stock.

Tom himself became President and General Manager. He was forthright and blunt. One day a prominent farmer was in his office claiming damages for a cow killed on the railroad. Tom listened. Then he said:

"If my train got out in your pasture and ran over your cow, I would gladly pay for it."

CONDR. SHUMATE meets the AB&C s south-bound ***Bee Line.*** Messenger Calvin S. Meeks delivers express to the Talbotton

With this he dismissed the subject and turned back to his work.

Elated over the successful outcome of their rail venture, the brothers bought the rest of the stock. Thus they became sole owners of the property, which consisted of one engine, two streetcars, a flatcar and a one-story brick building, with a capacious freight depot adjoining it to the rear. The employees were Tucker, engineer; Paul P. Lucas, conductor; Dave Lawson, fireman; Thomas B. Cain, station agent, and three Negro section men.

The engine was a 45-ton, eight-wheeled Baldwin, with 57-inch wheels; 15x24-inch cylinders, and 140-pound steam pressure. She was

named *Cherokee* and numbered four, but little is known of her past.

SOUTHERN OIL COMPANY, the only industrial plant in Talbotton, had built across the street from the depot, so a spur track was laid to take care of this lucrative business. When materials for the AB&A began flowing into Paschal, the little railroad was taxed to handle the increase in traffic. Local traffic had exceeded expectations. It was necessary to build additional yard facilities to take care of the AB&A cars.

But after the completion of the large railroad in 1907, business nosedived into the cellar. The boll weevil had made its appearance in the cotton fields, cutting the crop almost in half. Much midnight oil was burned in the little red brick building as Tom and Tuck discussed means of holding the railroad together. The cotton-oil and fertilizer shipments, the mail contract and the continued passenger travel were hopeful, but the possibility loomed of the new railroad gobbling up a lot of the freight business. To add worries, it was rumored that the Central planned to abandon Paschal and build a depot a mile up the track, where the AB&C crossed over their line. This was an ominous threat to the Talbotton Railroad men.

The railroad's facilities at Paschal consisted of a wye to turn the engine and a storage track for cars. Water was obtained from the Central's tank, thereby eliminating this expense at the other end of the line.

Tom went to Savannah to see what could be done. The officials assured him of continual cooperation from the Central of Georgia.

"We will build a sidetrack to Paschal," they said, "and grant you trackage right over it to our new station at Junction City."

THE CHEROKEE, shown with Engr. Tucker R. Persons, was the Talbotton's 4-spot. Built by Baldwin, she is believed to have come to the Talbotton from the Perkins Lumber Co. A Central of Georgia oldster, renumbered the 5-spot, replaced her in 1908

Number 5, a little eight-wheeler built by the Central in 1883, and first used in main-line passenger service but later on suburban runs, was delivered to the Talbotton Railroad in 1908. She was larger than the four-spot, weighing 70 tons. Her drivers were 57 inches; cylinders 16x24; steam pressure 145 pounds and her tractive effort 13,522 pounds.

For two years Talbotton Railroad had tough sledding; only general freight and fertilizer shipments kept it going. The oil mill, of course, helped out, but it also suffered in the money panic of 1908. Passenger travel remained good, and the road managed to carry on.

The panic hit the South a hard blow. I was braking on the Southern Railway at the time and I remember there were thirty-five pool crews on the board. Business disappeared almost overnight. Thirty-three brakemen and sixteen hired engineers were cut off without even the courtesy of transportation out of town. I was one of that number. But, if you remember, Teddy Roosevelt wielded the Big Stick over Wall Street, warning them if they didn't release money he would start the presses to flood the country with paper money. During the latter part of 1909 things perked up a bit and like most railroads, the Talbotton felt the shot in the arm.

Tuck died in 1916, after Fireman Lawson had resigned and been replaced by C. F. Althizer, a husky six-footer, and Mike Greathouse also had gone firing on the road. Station Agent Tom Cain died in 1918. The vacant job was given to Tuck's widow, who had helped out in the depot on busy days, and was well able to carry on Cain's tradition.

DURING the first World War the Talbotton, like the other carriers, had all it could do; but after the Armistice was signed in 1918, business went into the cellar and locked the door. Tom Persons again was fighting for the road's existence. Henry Ford's automobiles had taken passengers away from him. Tom asked the Public Service Commission for permission to discontinue his morning train and won his plea.

But things seemed to get worse from day to day. Trucks entered the picture and gradually gobbled up the Talbotton's freight, while more "tin Lizzies" picked off the passengers. In 1922 he again appeared before the Commission.

"I'm not doing any business on Sunday," he said, "and wish to discontinue the Sunday trains so that everyone working for the railroad can go to Church."

This request was granted. However, it seemed that the little railroad was losing its valiant fight. The boll weevil had now cut the cotton to less than half, and the cotton-oil mill had been forced to lock its doors for lack of cotton-seed.

Then, too, there was the question of the five-spot. This engine had worn herself out during the stress of war. Something had to be done about replacing her. In June, 1922 the railroad bought No. 6 from the Central of Georgia. She was formerly the 1501, a Rogers eight-wheeler, built in 1893 and weighing 139,036 pounds. Her cylinders were smaller, 15x24 inches, but her steam pressure was greater, 150 pounds. The drivers, 57 inches in diameter, were the same as No. 5. Her tractive effort was 12,295 pounds.

The six-spot is a well-remembered

engine and Mike's favorite. One of the best stories in Talbotton is that when Mike wanted a mess of fish, he caught them out of her tender.

On the east side of the tracks at Junction City there are three lakes, all fed by springs. The largest one, near the depot, covers almost two acres. It seems to be only three or four feet deep, but is nearer thirty and is so full of bream they bite your fingers or toes. This lake supplies water for the Junction City tank, and No. 6 always got her water from the south standpipe.

One day it became necessary to drain her tender to repair a leak. When Mike went into the tank to do the necessary work, he was frightened by something in the shallow water striking his feet and legs. He was heading for the manhole when he discovered that his free riders were fish. The word soon spread. In no time the tender was full of small boys. They scooped up a bucket of bream, some of them as large as your hand, before Mike chased them out. After that, it wasn't unusual to see a little urchin perched on the coal with a fishing pole hanging over the manhole.

"Every engine we've had has been fished," Mike grinned, "and there's heaps of little fellows in the 232, though she has been here only a few months."

Talbotton Railroad, like its big brothers, struggled through 1923 and '24, not making much money, but managing to keep out of the red. Lumber, which I said had not been a factor with the railroad, was soon to prove to be the proverbial friend in need.

One day in 1925, Tom Persons heard that a man named Charley

MIKE gets fun out of fishing for bream in the tender of his engine

PERSONNEL of the Talbotton Railroad consists of (left to right): Gus Persons, President; Francis S. Bivens, fireman; Pete Shumate, conductor; Mike Greathouse, engineer, and John Hodges, brakeman. Also (not shown here) Gus's cousin, Mrs. Margaret McGee, vice president; Mrs. Lilly Persons, station agent, and the section gang

Edwards was erecting a planing-mill on the outskirts of Prattsburg. Tom needed that lumber, and drove the twelve miles to talk things over with Edwards. For some reason, they failed to reach an understanding. Tom returned to Talbotton in low spirits. That afternoon he called Mike into his office.

"Mike," he said, "we've got to have the Prattsburg lumber. If you can get it, I'll make a deal with you."

"I'll get it," Mike promised. He had known the lumberman all his life. The twenty cars each month were practically in the bag when the jovial engineer left the depot.

"All I had to do," he grinned, "was grade a spot near the depot for Charley to unload his trucks of lumber. When I told Mr. Tom, he slapped me on the back, 'That's fine, that's fine!' I thought he had forgotten his promise, but when Christmas rolled around he called me into his office. 'Here's a present for you,' he said, handing me an envelope. When I opened it, I found a hundred-dollar bill and a ten-spot. It was the same every year until he died. I never knew why he made it more than a hundred dollars—I was too glad to get it to ask any questions."

I SAW why the railroad, which might have died an easy death after completion of the AB&C, struggled on, hoping for better days. Every man on the Talbotton was in the fight. Many citizens, anxious to keep the railroad running, went out of their way to throw business to Tom Persons.

When the highway was completed

MOST UP-TO-DATE equipment of Talbotton Railroad is the gasoline section car. Willie Jenkins, king snipe, is loading her up for a trip down the line, aided by Jacob Carter, Jim Trice and Sam Bryant

into Columbus along in 1926 and the trucks took a large portion of the fertilizer, coal and merchandise freight, it appeared that the railroad had reached the end of its usefulness. But during the darkest days of the Talbotton's long life, the lumber industry moved into the picture. Hampton Lumber Company located on the railroad just outside the town limits.

Shortly afterwards the Standard and Gulf oil companies built bulk stations beside the tracks in Talbotton, and with their increasing number of tank cars—three and four each month—the busy planing-mill was loading two and three cars daily. So the Talbotton Railroad survived another death rattle, to again enjoy prosperity.

In 1929 Tom Persons died. His sister Virginia succeeded him, while his son Raiford continued as General Manager.

Two years later the depression came. President Hoover predicted that grass would grow in the streets of our large cities. Grass did grow over the tracks of the Talbotton Railroad when lumber prices dropped so low that the mill was forced to shut down. Trucks and automobiles dwindled on the highways. Oil companies needed fewer and fewer tankers hauled into Talbotton. Day after day the little engine made trips to and from Junction City, with only the old passenger coach, an occasional passenger, and the two pouches of mail. Salaries were cut to the bone. The officials served without compensation, hoping for the best, while Mike hewed ties from pine trees beside the tracks for a dollar a day.

But things got worse. It looked as though the railroad would have to be abandoned. All concerned were invited to a meeting. Cards were laid on the table. Revenue from the mail contract and LCL shipments had enabled the railroad to pay current operating expenses, and this was hopeful. After much discussion, the officials told the employes they were willing to take a chance on better days to come, as they had several times before. They would also continue to serve without pay. The employes assured the brass hats that they would go along on reduced wages which supplied only a meager living.

In 1937, after six of the hardest years in the history of the railroad, the lumber market became better and portable sawmills moved into Talbot County. Hampton Lumber Company began oiling its machinery, which had stood idle, and soon the railroad received orders for empty cars for the dressed lumber.

"It was about this time I came into the picture," young Gus Persons told me as we talked during lunch in his home on the outskirts of Talbotton. "My Aunt Virginia was President and I succeeded my Cousin Raiford as General Manager.

"A few months after Hampton Lumber Company had resumed operation, and while war clouds were thickening over Europe, the Alexander Lumber Comany located a larger planing-mill on the west side of our tracks. The increasing demand for lumber boosted prices. Due to a revival in lumber, gas, oil and distillate, shipments grew overnight. The town itself prospered. Our LCL freight became heavy, and with agricultural prices improving with the general increase in business, we received large shipments of fertilizer. The farmers now grew peanuts and

sweet potatoes and cultivated large peach orchards in fields once white with cotton."

THIS unexpected blood transfusion revived the dying railroad. Mike, who now had cars to be switched and hauled to and from Junction City, was relieved of his tie-cutting job by section men who worked feverishly to repair the badly neglected track.

"Our little Rogers engine, the six-spot, was too small to handle this boom," Mr. Persons went on, "and she was sadly in need of heavy repairs. We sold her as junk to J. L. Knight of Columbus and arranged with the Central of Georgia to rent their outmoded engines. The Central agreed to keep these engines in repair by sending us another engine if the one in service needed shopping.

"The first engine was the ten-wheeled Baldwin No. 240. She was much heavier and longer than the six-spot, which prevented the crew turning her on our home-made turntable. A leg of the wye at Paschal had been taken up during the depression to use the rails for main line replacements. As a result, from the day the 240 arrived she remained headed in the direction in which she had come—toward Talbotton."

We were interrupted by three long blasts of an engine whistle. "That's Mike," Mr. Persons grinned.

The train is scheduled to leave at 1:20, but it was 1:40 when Mr. Persons and I arrived at the depot. Mike was impatiently looking at his watch.

"Just 'bout given you up," he said, stepping into the gangway to reverse the 232. "This is the hardest dadgummed engine to hoss over I've ever run," he grumbled, as he jerked on the tall Johnson bar.

I knew that Mike had a habit of putting part of the train behind the engine to keep from doubling all the way into Junction City in case he should slip down on one of the two stiff grades. So I wasn't surprised to find one car of lumber back of the tender, while four other lumber cars and an empty were between the pilot and the old wooden coach.

"Monday and Tuesday are light days," Mike said as we got under way, "because the mills are shut down on Sunday."

But let me explain how Mike secures his train. When he arrives

FUEL has to be heaved by hand into borrowed motive power, for the Talbotton owns neither a locomotive nor a coal chute

from Junction City around four o'clock in the afternoon with six to ten empties, they are set out by gravity into the house track. Then the coach is permitted to drift down the main line to the side of the depot, before the 232 rolls to her berth beside the coal pile back of the depot. She is permitted to die a slow death overnight. The next morning, about four o'clock, Mike and his fireman step across the street from their home and build a fire in her. Then they go back home to breakfast.

About ten o'clock they return to the engine and with the help of a colored brakeman, John Hodges, pick up the empties in front of the engine (she is backed up) and shove them to the lumber mills, where they are exchanged for loaded ones. When the loaded cars are assembled behind the tender, the crew returns to Talbotton. After letting all of the train but one car drift down the main line to couple with the coach, they go to lunch. However, Conductor Pete Shumate remains at the depot to

FIREMAN BIVENS takes on water (and fish) at Junction City. In the background is an AB&C overpass. Photo at right is an interior view of the old Talbotton coach bought from the Central of Georgia in 1928. The passengers are R. W. Boggs (an uncle of Condr. Pete Shumate) and Horace Denson

meet the "Bee Line" (AB&C) passenger train from Atlanta at 10:30 and to help Mrs. Lilly Persons with station duties.

NOW to get on with the trip, the roadbed of dirt and cinders is not unlike the other short lines I've ridden over. Wheels resound loudly as they pass over the unevenly spaced rail joints. The rocking cars take me back thirty-odd years, when I rode behind trains on main lines whose roadbeds weren't ballasted much better than the Talbotton's.

"This is our steepest grade," Mike explained as he peddled out air to check the speed of the train approaching the Hampton Lumber Company. "I've often stalled in the curve, within sight of the depot, and doubled into town."

We swung across a fill some eight or ten feet high, while the AB&C tracks, a short distance to our right, stretched across a curving embankment two or three times higher.

As we passed the Alexander and Freeman mills, Mike was continuing to brake the train. He pointed to his air gage and said: "Gotta bad leak back there—I've 'bout used up my air!"

"This is the Devil's Backbone and it goes into Florida," the fireman injected, pointing to an outcropping of granite rock.

The track turned first one way and then the other, to avoid heavy fills. On our left were low, red clay hills,

covered with pine trees. An occasional cultivated patch passed by as we rolled along at about thirty miles an hour. A graded highway, which I learned we would cross several times before reaching Junction City, parallels the railroad. To our right, the swampy land dropped gradually to the fill of the AB&C, which was now a little farther away and much higher above us.

The track swung to the right and a long hill popped into view. A short distance away, I saw the first bridge.

"We're near the bottom of High Point Hill," the fireman said, and then Mike called me to his side.

"That's Kimbrough Creek Bridge," the old hogger explained. "It's steel and about twenty-five feet long and eight or ten feet high."

After crossing another bridge, a wooden affair about six feet long, the 232 got down to hard pulling and soon slowed to a walk. The fireman was in the deck bailing black diamonds as each exhaust seemed it would be the last one. When I thought she would surely stall and Mike would have to cut loose from his train and shove the car behind the tender over the crest of High Point Hill, the fireman informed me that we had only a few car-lengths to go.

THE AB&C tracks had disappeared behind a low hill, but we soon swung a reverse curve in shallow cuts, the 232 barking her way up Heath's Cemetery Hill, when the railroad suddenly appeared through the blackjack pines. It is on a high, curving fill and the fireman said we'd pass under in a short time. We were over the hill and swinging in a left-hand curve, when the underpass popped into view. The railroad then enters a right-hand bend to pass under its competitor, the Paschal graded road trailing along too on the left of our tracks.

Rolling down a short tangent, we swung left and the fireman told me we were entering Paschal, the end of the railroad's property. Brakeman John Hodges climbed from the top of the car back of the tender to open the switch that let us into the Central of Georgia's passing track. Mike stopped and watched for a signal from the hind end, where the

LOADING rough lumber in Freeman's yard (see map, page 107) to be sized and dressed in the planing mill

conductor cut off the passenger coach.

Receiving the highball, he kicked off the brakes and pulled down the passing track as the brakeman opened another switch back of us, where the Talbotton Railroad's storage track branches off the passing track. The brakeman then returned to the first switch to stop Mike when the last car cleared the points. The five cars were shoved onto the storage track and we backed up to the first switch, where Conductor Pete Shumate stood.

"Gonna make a flying switch to place the other car," the fireman said, as Mike tore out after giving the car a good start. The engine was shuttled to the Talbotton main line, and the car, with Brakeman Hodges riding it, rolled by to the storage track. The brakeman tied up the brake and stepped back to the top of the car. Suddenly, he bent over and gripped the roof handhold with his left hand and the startling thing occurred. Before I could say Jack Robinson, he flung his body over the side of the car, not unlike turning a handspring, his right hand grabbed the third or fourth bar of the ladder down the side of the car and he was on the ground like a flash. His feet seemingly didn't touch the ladder in his flight down the side of the car.

Mike backed down the passing track, and I was surprised to see the fireman at the switch. When we cleared the points, he heaved over the switch lever and the engine pulled up toward the cars we had set out. Looking around, I saw the coach rolling down the Talbotton tracks toward the passing track switch with Pete at the brake wheel, and a few moments later, Mike was backing to couple to it.

BRAKEMAN HODGES shows how he flipped his body off a runaway car, years ago, without using more than one rung of the ladder

CONDUCTOR SHUMATE writes up his train at Junction City

HARDEST pull on the railroad is the quarter-mile from the Hampton lumber mill into Talbotton, with a grade exceeding three percent on a curved track. Mike sometimes has to double the hill

I left the engine to ride the coach up the mile of track to Junction City. We had only two other passengers in the dingey car on this trip.

(BELOW) Fireman Francis S. Bivens

MIKE'S home is beside the tracks at the Talbotton depot and one might say he and his fireman, Francis Stephen Bivens, live on their jobs. When it's time to make the trip to Junction City, they merely step across the street to the engine, No. 232, which is parked just behind the Talbotton depot.

The railroad has no roundhouse. Tracks to the little turntable, which was too short for the motive power rented from the Central after the road's last engine was scrapped in 1937, were taken up after a near-disastrous wreck to the company's only passenger coach. The main line and the house track led to the old turntable.

One day, while the crew was switching, a little urchin cut off the coach, and it rolled across the street toward the turntable. It just happened that the table was lined up for the house track, and the coach came to an abrupt stop, partly on the table

and partly over the pit. Otherwise, it would have plunged across another street and probably smashed into a house.

Other than the day about twenty years ago when Tuck Persons was going down High Point Hill and turned over a car of cotton on a ten-foot fill, this was the worst accident the railroad had met up with. It was necessary to call the big hook (which everyone knows is a very expensive call) to rescue the car of cotton; but after many sweating hours, the crew pulled the coach back to the depot. No one was hurt, and in passing, it might be said the railroad has never killed or hurt a passenger badly enough for damages during its sixty-three years of operation.

The enginemen are large, raw-boned fellows. Tom Persons used to chuckle when asked why he hired such big fellows for his little engine.

"Well," he would say, "I wanted 'em big enough to lift her on the rails when she jumped the track."

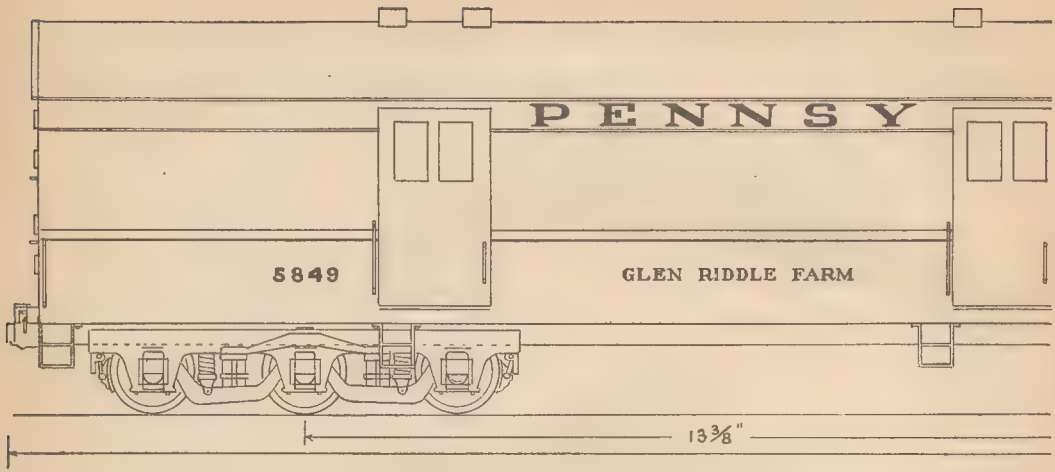
War demands for lumber keep the planing-mills humming. The little railroad, whose only owned rolling stock is a delapidated passenger coach and a motor car, is riding the waves of prosperity one more time. The LCL freight is good, the monthly average being between 300 and 400 tons, and Pete's train book showed that the 232 handled 240 loads during last December.

And don't forget the mail contract, which is an important item with the Talbotton Railroad, besides a convenience to the town. You see, when the Central trains are on time, the mail reaches Talbotton an hour earlier than it would via the AB&C from Junction City.

MIKE says: "Lad, give me a hand on this reverse lever. The old lady's j'ints are stiff today"

Then, too, after receiving the mail from Atlanta on the 11:30 AB&C train, the business men have two hours to prepare their mail for Savannah, Macon and Columbus. Naturally, they are body and soul for the Talbotton Railroad.

Next Month: **"Old-Time Island Railroads of Martha's Vineyard and Nantucket," by H. F. Thomas**



Model Railroading

Build an O-Gage Horse-Express Car

THERE'S a little rolling stock item that ought to take first honors at the next meeting of the Dusty Ballast & Sagging Wainscot Model Railroad Club. And when the cadaverous bird with the thick-bi-focals and the super-detail complex sidles up and condescendingly asks you why you didn't round off both ends of the "baggage car" roof, just open those full-working doors with a flick of the thumb and let him sniff inside. Hmm . . . Horsecar!

Prototype of this interesting and not-too-often modelled O-gager is the Pennsylvania Railroad's *Glen Riddle Farm,* pictured on pages 6 and 7 of last month's *Railroad Magazine.* As Ross Holman pointed out in the accompanying text, America's thoroughbreds travel in style these days and one or more horse-express cars are apt to be found at the head end of the swankiest passenger train.

To those who are annoyed by the broken roof line created when the usual turtle-backed baggage car heads a string of streamlined equipment, the *Glen Riddle Farm* is aesthetic balm. The roll of its conventional roof-end catches the onrushing breeze and sends it swirling unperturbably back across the car-tops to the rear of the *Juniata Narrows'* solarium, with never a dip at a vestibule joint. Bet you've yet to see a Pennsy train so completely symmetrical—but you'd probably like to.

The use of vital wartime metals for this horse-car can be reduced to a dozen straight pins, six shouldered axles, four truck sides, two bolsters, a pair of couplers and four round-headed wood screws. Cardboard and white pine will do the rest, along with four or five square inches of transparent celluloid and a dozen bakelite wheels.

So much has already been written about car construction that little need be said on this score. A roof and a floor section, separated by two end blocks or spreaders, comprise the basic framework. The former may be bought already milled to correct cross-section, or the shaping can be done by hand, using a wood rasp and sandpaper. In either event a shallow

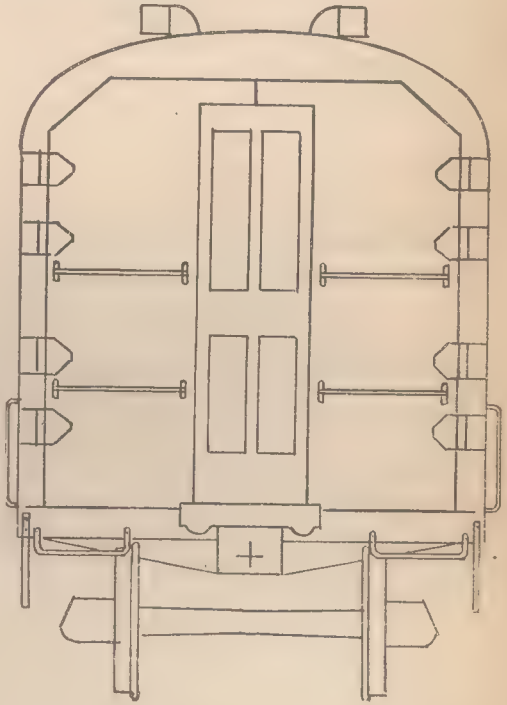
SIDE and loading end elevations of the Pennsylvania Railroad's roll-roof horse express car *Glen Riddle Farm.* The latter is reproduced full-size for O Gage

groove will have to be filed along each bottom edge to permit side-walls to fit flush with the turtle-back above them. Also, if full-working end-doors are desired, one of the spreader blocks should be moved well inward from the extremity of the car. A wooden center-sill and body bolsters are next applied.

Walls, as already mentioned, are cardboard—preferably 5-ply hot-pressed Strathmore. Before being cemented into position, all door apertures should be cut with a razor blade and the side doors themselves be attached from the rear. The full end-doors have dummy cardboard hinges and, if actual operation is desired, strips of fabric may be cemented along the inner door-edges and to the roof and floor section ends.

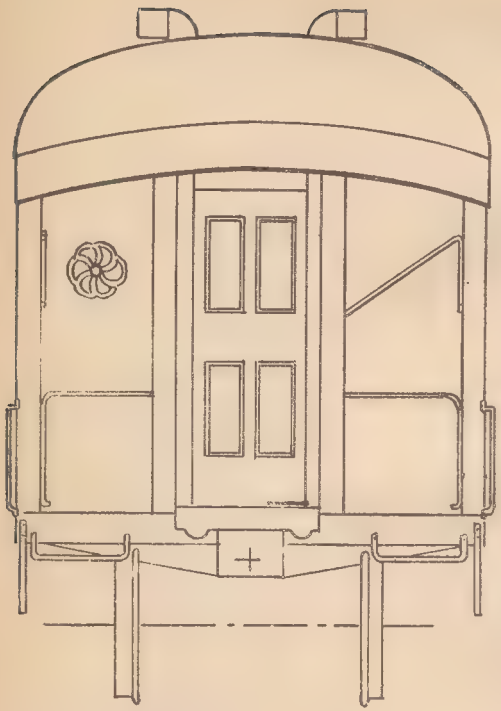
The conventional car-end has a diaphragm built up of alternating large and small cardboard laminations, to give the proper bellows effect. A toy auto steering-wheel casting will serve for the brake wheel and couplers can be filed from scrap metal. Roof ventilators are of wood.

Grab-irons, coupler release-bars, and car steps are formed from bent pins. The



trucks and couplers are secured with wood screws.

And now for the color scheme. The roof is slate gray; car sides are Tuscan red with gold lettering; and the undercarriage black or bottle green. For a note of added realism, spatter a fine mist of flat white paint at the door bottoms by dragging a finger across the bristles of an old toothbrush that has been dipped in it. The effect will be that of lime stains.



CONVENTIONAL end elevation; PRR horse-express car

FLASH! *U.S.S. Melville* reporting . . . Model pike aboard . . . rolling stock consists of baggage and mail car, 2 combines, 12 coaches (5 of them streamlined), 8 Pullmans and 2 solarium cars (one streamlined). Also 4 automobile cars, 2 furniture cars, 8 boxcars, 12 reefers, 5 tankers and 2 crummies.

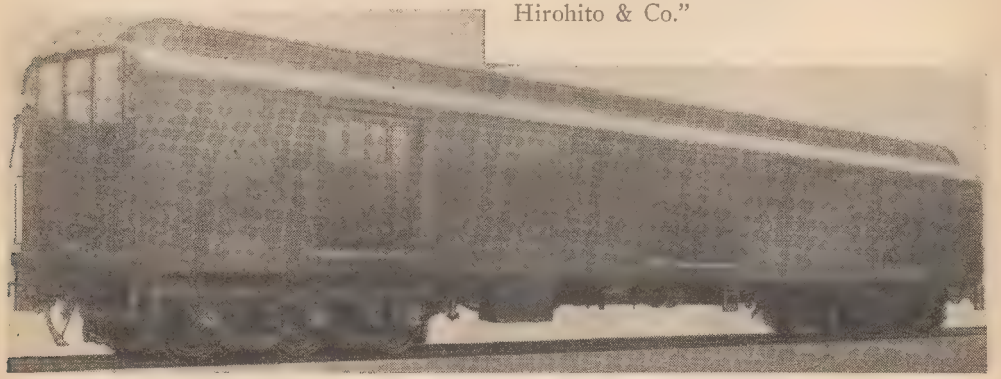
W. G. Barron, S1/C, who has the novel distinction of owning and operating this HO gage layout aboard ship, would be unhappy if he couldn't take along his model pike wherever he goes. There is no regulation prohibiting an able-bodied tar from following his model railroad hobby.

Barron's address is *U.S.S. Melville*, c/o Fleet Post Office, N. Y. City, Ship's Service Office. We were surprised to discover he had a sea-going railroad, and asked for details. Back came the answer:

"I really began to go in for models when the ship went to Pearl Harbor in 1940. Ever since, I can't go into a model store without buying out the place. I have all my rail laid down on white pine strips as a portable unit, but with a screw here and there it easily could be made permanent. The layout is all HO gage because it's compact. My ship is a Destroyer Tender and has just about every kind of a shop aboard, which really comes in handy when I have a construction or repair job too big to handle. I think I can say without causing too much argument that I have the only pike that has been halfway around the world, yet has not been ashore in any land except the U.S.A."

Barron is twenty-six, but says his interest in railroading dates from the time he realized that Christmas wasn't Christmas without a Lionel or American Flyer outfit tagged with his name under the tree.

"I've always been a rail at heart," he says. "At one time during the Depression had the glorious job of wiping hogs on the New York Central. Someday when it's over, over here, I want to go back on the high iron and get my whiskers. If any of you boys out on the Rio Grande read this, remember to keep a place open for me on the board, because I'm coming back as soon as we unload Hitler, Hirohito & Co."



MICHIGAN CENTRAL horse-express car has conventional clerestory roof ends

Barron has served under five captains, one of whom was killed on the *Arizona*. They all thought he had a fine hobby.

"But," the bluejacket adds, "to this day, I don't think they understand how a sailor can have railroads on his mind."

In Iceland he met an officer who had enough track, rolling stock, stations, interurbans and streetcars to fill a good-sized steamer trunk. In Barron's opinion, the officer couldn't have found better company for those long cold Arctic nights.

Seaman Barron would like to hear from railroaders, fans and model enthusiasts everywhere, and says he'll do his best to answer all mail.

* * *

Model Trading Post

LISTINGS here are free. Write very clearly and keep 'em short. This department is only for amateur model railroaders. *It is NOT for dealers.*

Because of time required to edit, print and distribute *Railroad Magazine*, all material should be sent to the Editor seven weeks before publication date. Each *Trading Post* entry must be accompanied by the latest Reader's Choice coupon (clipped from page 161 or home-made). Items are published in good faith, without guarantee. Address 205 East 42nd Street, New York City.

JAMES BEATTY, 1511 E. 85 St., Chicago, wants 2 or more Lionel r.c. switches.

JOHN BELL, 1508 Howard Ave., Harrisburg, Pa., will trade AF *Hiawatha* loco w. whistle tender for 840 industrial power station—or what do you offer?

M. D. BELL, 63 N. Seminary St., Galesburg, Ill., buys 072 solid T-rail track, switches; 072 tubular switches; rheostats.

E. L. BLAIR, 1534 Silver Springs Blvd., Ocala, Fla., will sell or trade 14 secs. Lionel solid T-rail str., 16 secs. curved track, pr. r.c. switches 731; good cond. Wants 3/16 solid T-rail, 1/10 brass third rail, 700 E W Hudson loco, and whistle unit for 700 E W.

S. BLANC, 1350 Tennyson St., Denver, Colo., offers AF B&O frt. train, *President Washington* 4-6-2 loco, tender 4622-6, box, oil, milk and dump cars, caboose, 12 secs. 40 in. curved track, 2 secs. str., one 75 watt transf., $25. postpaid.

R. A. BRIGGS, 16 Parkside Ave., Lancaster, Pa., wants HO gage cars, trucks, track, engines, interurbans or streetcars, powered or push. State price, make, model, cond.

Maj. JOHN S. CRULL, 319th BN., Camp Tyson, Tenn., will buy Lionel 700 Hudson and 701 switcher; 1 or 2 Saginaw kits; Scale-Craft 0 gage loco and car kits; four 2 and 3 K&D motors new or in good cond.; 4 rectifiers for polarized reversing.

AUSTIN H. DAVIDSON, 433 N. Bosart Ave., Indianapolis, wants 12 sheets balsa wood 1/32 x 4 x 36 and 12 sheets 1/16 x 4 x 36.

CURTIS GAUGER, Rt. 2, Watsontown, Pa., wants AF 494 baggage cars, 495 coaches, 496L Pullman and 497L ob. car. Also Lionel 0-27 boxcars, switches.

D. P. GRIMES, 115 N. St. George St., Allentown, Pa., will buy 419 series std. gage pass. cars. Combustion, driving, ob.

ROBT. P. HAHN, Jr., 614 Main St., Hellertown, Pa., wants 2 Marx 5151 motor units; 1 Marx left r. c. switch, good cond.

R. E. HOYLES, 69 N. Drive, Eggertsville, N. Y., wants std. gage eqpmt. Send list.

ROSCOE HURLBURT, 215 W. Main St., Plainville, Conn., offers cash for Lionel 2900 series cars, 711 switches, good cond.

D. H. McCLAIN, 105 E. 3rd St., Cincinnati, O., offers Ives 1122 loco, Erie boxcar, Lionel 256 loco, Bing No. 1 gage pass. cars, AF 1916 catalog, Ives 1920, Lionel 1922-'23. Wants old tinplate catalogs, old 1 and 2 in. gage locos, cars, streetcars.

E. R. McEWAN, 5310 Potomac Ave., Chicago, will buy old-style sta. gage or 0 gage loco, cars, track. Prefers compl. set.

H. V. MANGIN, 60 Hillcrest Ave., Manhasset, N. Y., wants Knapp 4-8-2 loco, HO gage. State cond., price.

E. L. MASENGILL, Box 51, Kingsport, Tenn., offers cash for scale or tinplate HO eqpmt., compl. layout, kits or parts. Send list, prices.

RICHARD MEYER, 416 2nd St., S.E. Minot, N. D., offers 0 gage Lionel eqpmt: 30 OC curved track, new 19c ea., 810 derrick car. $6.75; 165 r.c. crane, new, instructions and original carton, $8.; 1020 Wooden ties, ¼ x ⅜ x 2¼, never used, $2. All F.O.B. Minot. Wants Lionel *Flying Yankee* streamliner.

DOUGLAS H. MOTT, RFD 1, Waterbury, Conn., offers cash for Lionel elec. type twin-motor 256, good cond.

GEO. MURRAY, 189 School St., Manchester, Conn., offers cash for live-steam loco No. 1 or 0 gage; also *Model Steam Locomotive* by H. Greely, *Shop, Shed and Road* by L.B.S.C. Correspondence from England and Canada welcomed.

Pvt. WM. S. ORONKIN, 1825 Ravine St., Sorth Braddock, Pa., offers cash for second-hand replica UP *Challenger*.

MARK E. PARKS, 372 Grand Ave., Brooklyn, N. Y., offers cash for these HO items: MU mechanism, good cond.; tender trucks, frt. cars, all 2-rail. Write.

M. M. PERRETT, Jr., Marshall, Mich., will pay cash for certain issues *Railroad Magazine;* also *Model Railroader* bound Vols. 1, 2, or any year *Model Railroader Cyclopedia* except '38-'39. Will trade for *Model Craftsman*, Vol. 6 Nos. 1-4, Vol. 10 Nos. 1 and 4-12 and later issues; *Trains*, Vol. 1 Nos. 2-7 and 9; *Model Builder*, Feb., April, Oct., Nov., Dec., '40 and March '41; '41 and '42 *Model Railroader* complete. Write for list, stating terms and cond.

RALPH M. PERRY, 8 Vermont Ave., Brattleboro, Vt., offers transfers for tinplate eqpmt., any gage, make or cond. List for stamp.

J. E. SAVAGE, 1301 W. Boone, Spokane, Wash., offers cash for Buddy L Trains or single items of same.

FRED E. SCHORR, 1809 Elk Ave., Pottsville, Pa., offers cash for 00 and HO 2-rail eqpmt., all kinds; or will trade in part for Marx and Lionel 0 gage or Lionel and AF std. gage eqpmt. List for stamp.

OSCAR SOMERS, 6 W. Mantua Ave., Wenonah, N. J., wants Vol. 2, No. 4, *Lionel Mag., Model Railroader's Digest*, April, May, June, Aug., '36. Has catalogs to swap.

T/s PALMER SPALDING, Hq. Co., T.D. Bn., A.P.O. 960, c/o Postmaster, San Francisco, Calif., offers cash for 3 Varney HO locos, good cond.

FRED STOVER, 20035 Frazier Dr., Rocky River, O., wants vertical steam engine, size anywhere from ¾ x ¾ to 1⅛ x 1⅛. Send description, price.

O.P. STUFFLEBEAM, Box 47, De Pere, Wis., offers cash for old 1906-'14 Lionel catalogs, Lionel std. gage American type loco, old cars, tracks of that period.

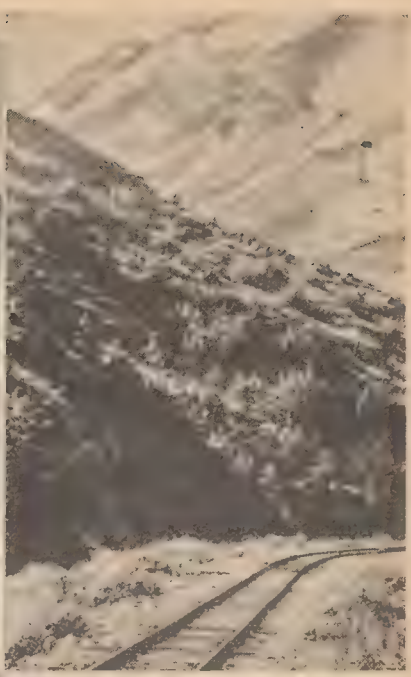
D. M. TREGLOWN, 528 S. Lincoln, Casper, Wyo., will sell AF K-5 4-6-2 Pacific loco, like new, has r.d.c. Write.

W. R. TOMPKINS, Curtis Field, Brady, Texas, will sell or trade Lionel eqpmt engine 224-E and whistle tender; caboose 2657; box 2655; auto dump 3659; floodlight 2620; whistle control 166; type R 100 watt transf.; r.c. sections; r. and l. manual switches 021; one 45 and 90 deg. crossover. Wants AF 3/16 Tru-Model engine, tender, frt. cars.

SCOTT E. TWIST, 85 Scott St., San Francisco, offers 8 cabooses, 2 oil cars, 2 gondolas, 2 obs., No. 66 whistle controller, No. 020 0 gage crossover, No. 48W stationary whistle station, 0 gage str. track OS. List for stamp. Wants 4 r.c. switchers, 022, 711, or 1121. Will pay cash.

AUGUSTUS WILDMAN, 4th, 211 Ninth St., New Cumberland, Pa., will sell or trade for HO eqpmt. *Railroad Magazine, Off. Guides*, emp. and pub. tts., *Model Railroader, Model Builder, Model Craftsman, Miniature Railroading;* pix, size 116. Sample and list, 10c.

PAUL WILLIS, 910 E. Chelten Ave., Philadelphia, Pa., will make trolley models, any make, type up to 1890, bodies only 8½ single truck, $3.50 ready to mount; working poles, 75c ea. Interurbans, kits, wood parts for sale. Send stamp for list.



NERVE fibre on the backbone of the Continent is the 3-foot gage White Pass & Yukon, connecting the Alcan Highway at Whitehorse, Yukon, Canada, with Skagway, Alaska. Taken over by the Army half a year ago, its equipment is guarded by MPs

Photo from Vernon L. Ardiff, 4037 Roscoe St., Chicago

LOCOMOTIVES of the White Pass & Yukon have outside frames; can be converted to standard gagers if and when the track is broadened

The White Pass & Yukon Goes Khaki

A SERGEANT skippers the WP&Y's *Broadway Limited.* Patrons are soldiers, miners and trappers

DOWN the main street of Skagway, at the northern tip of the inside passage, chuffs the ***Broadway Limited***. To reach the great Alaska-Canada defense highway at Whitehorse, she must climb 2,800 feet over one of the steepest grades in the world

ABOVE: Baggage car with a cupola is an oddity found on the international carrier. M. R. S. troops are transferring highway supplies to sledges at Whitehorse

OPPOSITE PAGE: Cantilever span across Dead Horse Gulch is characteristic of the feats accomplished by White Pass & Yukon engineers

Electric Lines

Conducted by

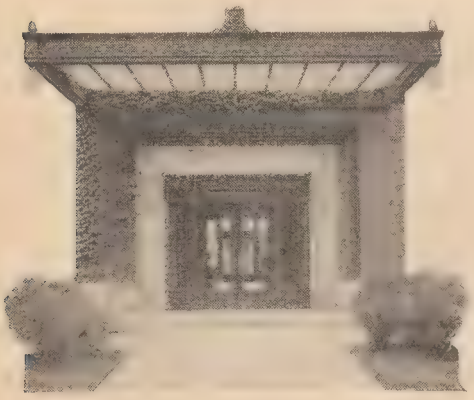
STEPHEN D. MAGUIRE

University Owned Street Car

UNIQUE among trolleys is a car belonging to the University of Illinois at Champaign, Ill. This piece of equipment is, we believe, the only college-owned trolley having rail connection with an operating juice line. Its tracks on the campus join the Danville-Decatur branch of the Illinois Terminal Railroad, a branch that the WPB sought to have abandoned several months ago. Public opposition to the WPB proposal seems to have removed the threat, at least for the present, and the campus trolley retains its direct link with the outside world.

UNIVERSITY OF ILLINOIS' locomotive testing laboratory houses the college-owned streetcar in addition to other railroad equipment. Below: Entrance to the University's Transportation Building

Why should a university own an electric car? Well, here's the story. A professor named Morgan Brooks, of the university's Electrical Engineering department, became interested in the electric railway displays at the St. Louis World's Fair in 1904 and made a careful investigation to find a car suitable for the college. His aim was to get rolling stock that could be used to give students practical instruction in problems of rails and equipment as well as to carry out research.



First Professor Brooks obtained permission to secure such a car. Then, with the cooperation of the Illinois Traction System, which would aid him in operating it, Brooks ordered the car he had chosen.

"I wanted a certain car that actually had been exhibited at the Fair," he writes, "but I have a feeling that, because I desired a car without seating, the manufacturers shipped us another car from their factory rather than remove the seats from the one that had been on display."

Although Brooks had placed the order April 7th, 1905, delivery was very slow. The car with its special equipment, built by Jewett Car Co., Newark, O., was not ready to run on the college grounds until the win-

ter of 1905-'06. As the photo shows, it's an attractive interurban of the period. Forty-five feet long, double end, with a wood-sheathed body, the car weighs 55,150 pounds, has four Westinghouse 50-h.p. motors, and can run 55 miles per hour.

Upon buying the trolley, the University of Illinois installed in it much of the equipment usually placed underneath a car, such as switches, circuit-breaker, etc., so that students could actually watch it in operation. Also included are large tape rolls that record the condition of rail bonds as the car passes over them, and the record of operation. The 24-inch tape roll gives a graphic indication of motor current, voltage, speed, distance, location, brake-cylinder pressure, whistle operation and the like. This tape can be driven by its own motor, or by connection with a car axle so as to present the data directly in terms of distance traveled.

The bond-tester records changes of resistance of a circuit set up through the rail under the car, between wire brushes attached to the inside ends of the truck frames. Trucks

Photo from George Roush

STUDENTS get a great kick out of owning a trolley. Running over Illinois Terminal trackage, they make annual bond tests for the road

are insulated from each other and a low-voltage current is passed through the 12 feet of rail between the brushes. Changes in resistance resulting from bonds and other factors are measured for each rail by a delicate millivoltmeter. Its readings are automatically recorded on the moving tape.

After a test run, the recording tape is cut into lengths representing several miles of track. Each is inspected to determine defective bonds in the rail. The value of such tests is shown by the fact that frequently 10 percent of the bonds are found to have too much resistance.

Illinois Terminal Railroad, besides allowing the car to be operated by the University over its rail, has used the car itself to test the bonds on its whole electric system. George Roush, 3330 W. 65th Pl., Chicago, tells us that last year several members of the Illinois Railroad Club had the time of their lives operating the car on the test trackage, for the demonstration of its equipment to guests of the Electrical Show. Our description of the car comes from A. R. Wildhagen of the University's Public Information office, Urbana, Ill., who goes on to say that this is not the only U. of I.-owned rolling stock. The college is also proud of its eight-wheeled caboose, which contains all of the apparatus found in a dynamometer car.

Steve Maguire

OUR list of North America's trolley lines (April and May issues) was well received. However, one of those we listed as still running is really abandoned. Stanwood Griffith of Ashton, Ill., tells us that some rails have been taken up on this line, the Cia de Tranvias de Nuovo at Laredo, Mexico. Furthermore, our list didn't mention the city lines of Guadalajara, Mexico's second largest city. The Guadalajara system has two car-barns, one filled with summer cars, the other with closed equipment.

"Talk about car shortages!" Stanwood comments. "We went past the barn during rush hours and saw only one car left in it."

Mexico City has a fine system, using many center door cars of modern design, Stanwood points out. Their cars are painted orange and are kept in very fine condition.

"This is the only system I know of that operates a car number 1, a little four-wheeler," he says. "I would be interested to know what other lines have a number 1 car in regular service."

ONE-SPOTS are the lettering man's delight. This trim little sample used to skim over trackage of the Hershey, Pa., Transit Co.

Photo from James Barstow, 262 Bruce St., Syracuse

A one-spot that looked the part; she ran through the streets of Syracuse, N. Y.

Acting on the challenge, we present a few photos of one-spots. Some of them, however, are no longer in service. Probably the newest trolley to carry the number 1, on the Philadelphia Suburban, was built hardly three years ago. Philadelphia Suburban cars formerly carried numbers as high as the 80 series, but when the new cars were delivered the company numbered them from 1 to 10, thus saving time for the painter who does the car lettering.

* * *

BRIDAL CAR: Anthony Franz, 2139 Straubs Lane, Pittsburgh, Pa., informs us that when the pleasure-driving ban in Eastern states was in effect, a wedding couple and their friends were at a loss to find a way for all to get from Ingram to Oakland, Pa., where the marriage was to take place. Then an inspiration came to the bride-to-be. "Why not go by trolley?" she asked, and the problem was happily solved. The party chartered a PCC car on the Pittsburgh Rys. Nearly 50 guests rode it to and from the church. The car was decorated inside and out with white and blue ribbons. Nobody had gas worries or tire trouble. Does any reader know of another trolley used as a bridal special?

* * *

BOOMER TROLLEYS: "Who can beat this record?" asks W. Broschart, 63-46 Fresh

MARION (Ind). No. 1 is a Birney

RUBBER-NECK trolley is first on Montreal's roster

FIRST of a long line of Third Ave., New York City, trolleys

Pond Rd., Ridgewood, N.Y. The 400 series cars of Third Avenue Ry. in New York City were built by Brill in 1905 and operated on the Metropolitan Street Ry. lines until 1907 when they were turned over to New York Railways. Numbered in the 1-150 series, they ran on the latter's tracks until 1920, when they were sent to the N.Y. & Harlem Railroad lines and renumbered 1200's. In 1935 the Harlem line stopped running. The cars were then bought by the Third Avenue Ry., being numbered in the 400 series. About the middle of 1942, they were withdrawn from service. Quite a few of them were sold, several to Quebec, Canada, and others to San Diego, Calif.

* * *

LOUISVILLE residents are beginning to appreciate the advantages of streetcars, writes Ernest K. Gibson, 520 Whitney St., Louisville, Ky. Since they replaced the buses on the 6th and Market Street lines, the people have become aware that there is a lot more room and a much smoother ride in the cars than the buses ever gave them. Every passenger car owned by the company is in constant use. There are 245 in all, including 24 trailers.

"The 80-odd cars that were burned two years ago would come in mighty handy now," Ernest adds.

* * *

BRIDGE LINE: In connection with a letter sent us by Leonard Schulhaus, we explained in the April issue that the Queensboro Bridge Ry. had no rail connection with any other juice line. Leonard and several other readers have pointed out that, although there is no connection by which cars can operate under their own power between the QB and the Third Avenue Transit line nearby on 59th Street, there does exist a track connection between these lines near 2nd Avenue and 59th Street in New York City.

"This connection is unusual because it is not electrified," writes James Wilson, 138-30 Northern Blvd., Flushing, N. Y. "The bridge line uses overhead trolley wire, while the 59th Street line has underground third rail. The connecting track is 'dead.' When necessary to haul cars from the bridge line to the Third Avenue shops, it is done by one of the Third Avenue's large emergency trucks. There are no shop facilities on the bridge line, not even head room enough to raise a car off its trucks."

SOUTH SHORE'S orange No. 1

* * *

"MILWAUKEE ELECTRIC article in your April issue is nicely illustrated, but some of the photos are not explained enough," suggests Wm. Oesterreich, Co. C, 739 M.P. Batt., Mt. Vernon, Ill.

"On page 138 is pictured an express car, the operation of which forced the cancellation of the old Milwaukee Northern's franchise within the city limits about 1930," Bill continues. "Originally a yellow interurban, it was converted to an express car. When a franchise squabble came up it was remodeled into a combination car in an attempt to conform to franchise requirements. But the city would not permit this, so all the MN tracks in Milwaukee, except for a short stretch, were pulled up. The remainder were integrated with the Milwaukee Electric's 3rd Street line."

Bill also wonders why no mention was made of the Lakeside Belt Line. He says

Photo from Harry C. Bartley

PEDESTRIAN shoveller No. 1 traveled the streets of Pittsburgh, Pa.

this freight route was built at the start of the Depression when the public utilities were trying to stave off panic by heavy expenditures. The Belt Line is five or so miles long, connecting Milwaukee tracks with points near Hales Corner and Cudahy, and was intended to remove all express cars from the city streets. It is beginning to pay for itself now, mainly due to two steam road interchanges.

The Milwaukee Electric acquired several cars from an Eastern outfit. These were to be used as combination cars on the "Northern" line, but they were wastefully turned into express cars when the freight car ban was put on the "Northern" by the city. The car shown on page 144 of April issue is one of these.

* * *

BILL RICCITELLI, former editor of *The Southern New Englander,* now in the Armed forces, writes that he recently visited Cedar Rapids, Ia., and found that No. 65 of Indiana Railroad, purchased last year, is still untouched, and, due to shortage of parts, probably won't see service until after the war. Of the group of cars that were purchased from the C&LE, only 116 have not been rebuilt. That car is seeing regular service although it, too, will have to wait until after the war to be rebuilt.

Bill sends news from his home town, too. The Buttonwoods freight line of United Electric Rys. in Providence, R.I., earned more revenue on its remaining 1½ miles of track in 1942 than the whole system did between 1900 and 1942! Because of the heavy freight business, the company is planning, more or less unwillingly, to rerail the freight line with 90-pound track.

* * *

MINNEAPOLIS RAILFAN ASS'N is planning on a complete tour of all Twin City R.T. lines in the near future. Fans in that vicinity may write Charles Sulzbach, 5200 Drew Ave., So., Minneapolis, Minn., for details. As far as we are aware, this will be the first TCRT railfan tour ever made.

* * *

FENDERS: Foolish-looking fenders have disappeared from most of the PE trains lately, reports Philip Goldman, 840 Tremaine Ave., Los Angeles, Calif. Perhaps the demands of war scrap drivers are to be thanked for the departure from that mid-Victorian practice. Even if the PE cars "won't look the same" with the fenders off the front ends, they will at least have a little more modern appearance, and motorists on the streets won't have their fenders buckled by coming in contact with the wire projections.

The Northwestern Pacific cars now running on PE are popular with the public, but motormen say they are a bit sluggish in starting and rather slow on fast track.

Bernard Root, 180 J Street, San Bernardino, Calif., regrets the scrapping of the SB-Colton line.

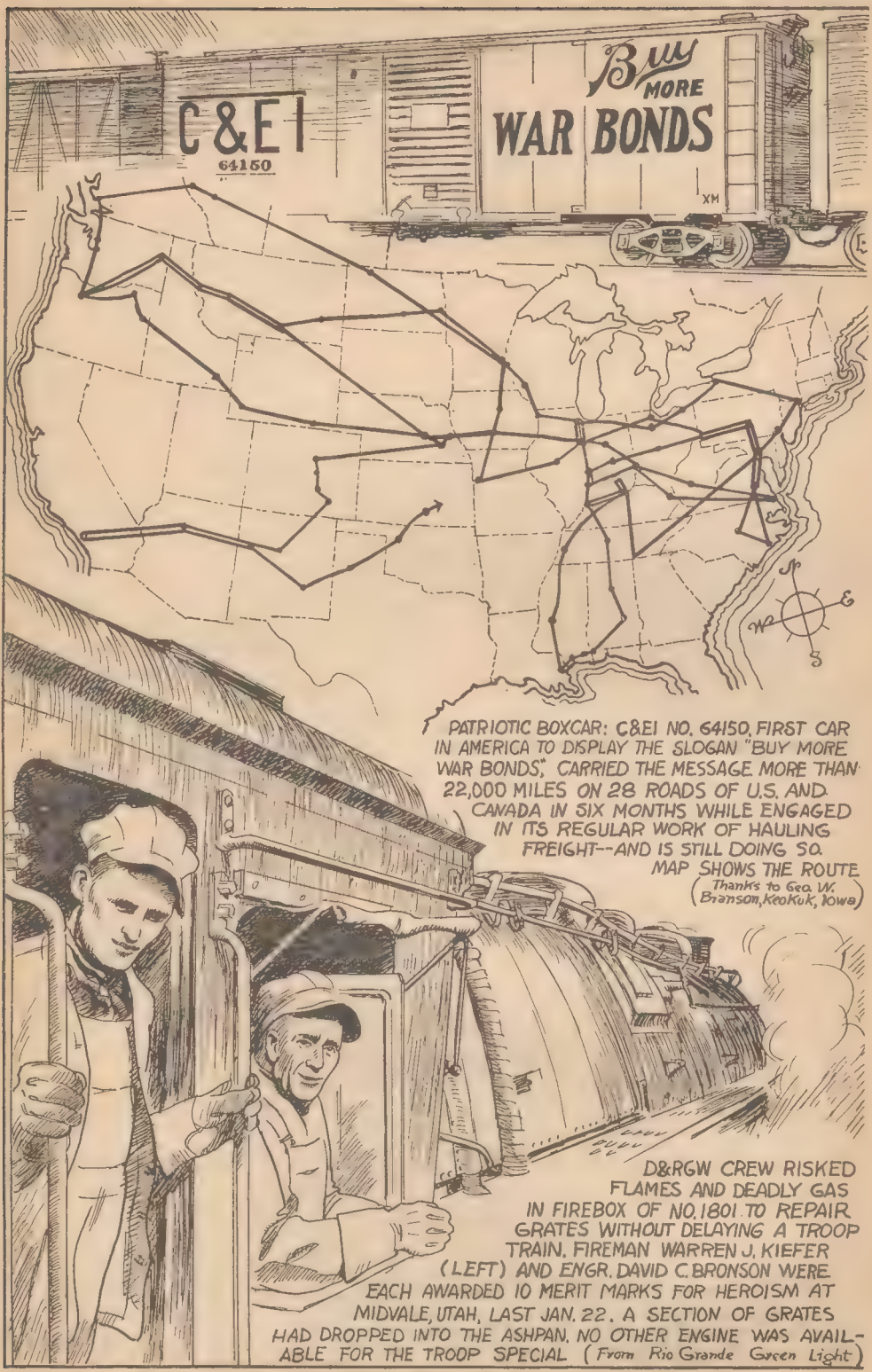
"It sure was a sorry sight to see them taking down the wire," he mourns. "The rails are still in, but I look for them to be taken out any day. The bus company is trying to get more buses to handle the overflowing crowds on the same route that the trolley ran. Doesn't sound to me like a good way to handle the transportation problem."

FIRST in the hearts of San Franciscans

TOONERVILLE trolley has a New England counterpart in the Depot line of Union Street Ry. of New Bedford, Mass., we learn from Earl Bacon, former Boston Elevated guard, now at Port Hueneme, Calif. This line runs between the center of the city and the railroad station, just a few blocks. It is operated only to meet incoming trains. Although train passengers are met by the trolley, they have to walk when they return to the railroad, for the car doesn't give service from the center of town to the station.

* * *

BUSINESS is booming in New England. The Boston Elevated has come out of the red for the first time since 1929, clearing $900,000 in 1942. Eastern Massachusetts Street Ry. is busy, too. Their Quincy lines, which were to have been abandoned early in 1942, are now running short of equipment. Several Boston Elevated class 5 cars have been imported for use in that industrial city.

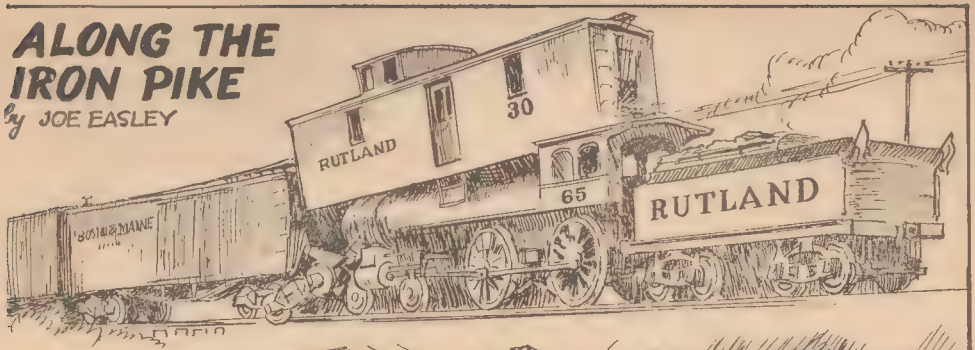


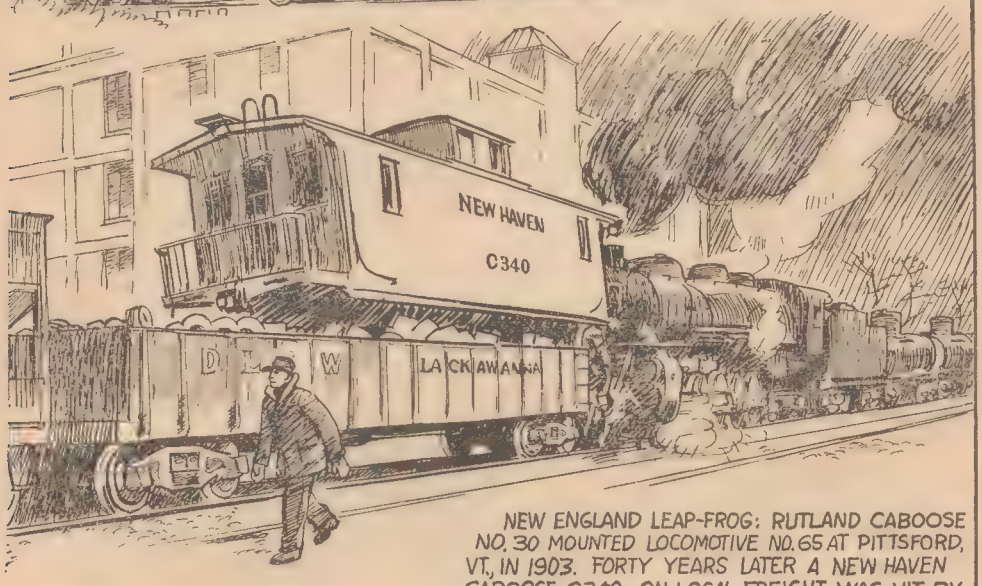
PATRIOTIC BOXCAR: C&EI NO. 64150, FIRST CAR IN AMERICA TO DISPLAY THE SLOGAN "BUY MORE WAR BONDS", CARRIED THE MESSAGE MORE THAN 22,000 MILES ON 28 ROADS OF U.S. AND CANADA IN SIX MONTHS WHILE ENGAGED IN ITS REGULAR WORK OF HAULING FREIGHT--AND IS STILL DOING SO. MAP SHOWS THE ROUTE. (Thanks to Geo. W. Branson, Keokuk, Iowa)

D&RGW CREW RISKED FLAMES AND DEADLY GAS IN FIREBOX OF NO. 1801 TO REPAIR GRATES WITHOUT DELAYING A TROOP TRAIN. FIREMAN WARREN J. KIEFER (LEFT) AND ENGR. DAVID C. BRONSON WERE EACH AWARDED 10 MERIT MARKS FOR HEROISM AT MIDVALE, UTAH, LAST JAN. 22. A SECTION OF GRATES HAD DROPPED INTO THE ASHPAN. NO OTHER ENGINE WAS AVAILABLE FOR THE TROOP SPECIAL (From Rio Grande Green Light)

ALONG THE IRON PIKE

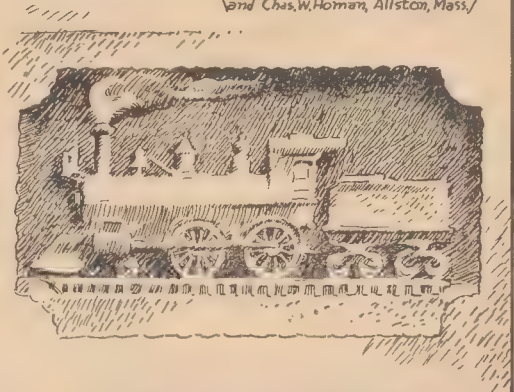
by JOE EASLEY





NEW ENGLAND LEAP-FROG: RUTLAND CABOOSE NO. 30 MOUNTED LOCOMOTIVE NO. 65 AT PITTSFORD, VT., IN 1903. FORTY YEARS LATER A NEW HAVEN CABOOSE, C340, ON LOCAL FREIGHT WAS HIT BY AN ENGINE HAULING 69 OIL TANK CARS AT ROXBURY, MASS., AND CLIMBED ABOARD A LACKAWANNA "GON" (Pictures From Roy Haseltine, Locomotive Engineers Journal, and Chas. W. Homan, Allston, Mass.)

FIRST GIRL IN AMERICA TO BECOME A RAILROAD CLAIM AGENT IS SAID TO BE MISS FRANCES FREEMAN, BORN IN CODY, WYO., NOW WORKING FOR PRR IN PENN STATION, NEW YORK CITY



ENGINE CUT INTO TOMBSTONE IN GREENWOOD CEMETERY, ZANESVILLE, O., MARKS GRAVE OF MAHLON G. HART, PRESUMABLY A B&O EMPLOYEE KILLED BY A TRAIN WRECK IN 1875. WHO KNOWS THE FACTS? (From B&O Magazine)

Official photo from Charles E. Coe, special representative, Erie Railroad, Midland Bldg., Cleveland, O.

ERIE RAILROAD engine Number 4219 rides the table at Susquehanna, Pa., a hillside division point from which main-line tracks climb the system's ruling grade to Gulf Summit

On *the* Spot

EVEN with the realization that some of them may be drafted into the armed forces, the Illinois Central is training boys to meet the manpower shortage on its system. These youths, in groups of sixty at a time, are taught the fundamentals of firing, braking and switching in the company's new school at Carbondale, Ill. They are picked from the road's ten operating divisions.

The lads receive free transportation to and from Carbondale and are boarded at company expense while they are taking the ten-day course.

After getting the instruction from practical railroaders, they are sent out on the road as students and then qualified for duty. The IC's assistant general manager, W. A. Johnston, puts it this way:

"These boys are being enlisted in railway service for the duration or until called into military service. Although their regular education will be suspended, they will be earning money which, when the time comes, can be used for a more advanced education than otherwise might be possible. It is understood that they are expected to resume their education when IC men now in military service return to assume their former jobs."

* * *

AFTER reading Ross L. Holman's article on the shipment of horses which opened our June issue, Mrs. Isadore Oslick of Columbus, Ga., points out that dogs travel by rail to a greater extent than all other animals. Mrs. Oslick estimates that between ten and eleven million dogs ride railroad trains in this country every year. Some breeders ship as many as 250 canine passengers at a time.

"Bulldogs don't mind traveling at all," she reports, "but high-spirited terriers, collies and setters require a lot of care. As a rule, circus wild animals are better railroad travelers than dogs, for they sleep much of the time, apparently paying little attention to noises and the jarring of starts and stops. Dogs, however, are almost invariably alert while enroute. Every new sight, smell and sound arouses their interest."

Speaking of animals, a family of hobo cats recently rode the rods around Ohio quite a bit. *Kitty*, the feline mascot of the enginehouse under the Market Street bridge in Youngstown, gave birth to four kittens. Railroaders made such a fuss over the little balls of fuzz that the mother picked up her offspring and carried them tenderly, one at a time, to the airbrake instruction car, setting them down on the center beam. Before she had a chance to wean her children, the car was sent off to Niles with a local freight. All five cats journeyed along. Later, the car went on to Cleveland, attached to a passenger train, and the felines had a faster ride.

George Ferguson, an airbrake inspector at the Kinsman enginehouse in Cleveland, spied *Kitty* and her family. He bundled them all up in a crate and sent them back home to the Youngstown enginehouse. Stanley Morosky, foreman of the enginehouse, is now trying to bring the youngsters up respectably, so they can live down the bad effects of their hobo beginning.

* * *

COVERED railroad bridges missing from R. S. Allen's list in April's *Spot* department include two on the Milwaukee Road, according to Morris Wilkins, Box 887, North Bend, Wash. Both of these bridges span the Snoqualmie River, one at North Bend, the other 2½ miles south of it. Besides, says Morris, the Milwaukee's covered bridge at Carnation, Wash., crosses not the Snohomish but the Snoqualmie River; while the Great Northern owns the bridge at Snohomish, Wash., that Allen thought was on the Milwaukee Road at Snoqualmie, Wash. There is a covered railroad bridge at Snoqualmie, over the river of the same name, but Northern Pacific trains use it.

"This," Morris writes, "is the only railroad bridge I know of that is half conventional steel construction and half covered-wood construction."

We learn from Frank T. Williams, a Southern Railway brakeman, 512 W. Maple, Johnson City, Tenn., that the last remaining covered bridge on the narrow-gage East

Tennessee & Western North Carolina Railroad—there used to be four of them—is located half a mile above Hampton, Tenn.

"One of the biggest thrills in railroading," Frank enthuses, "is the view you get of the Doe Gorge just east of this span. I practically grew up on the ET&WNC. My dad has been a conductor with the company over 30 years and is second on the seniority list. My uncle, Cy Crumby, is number one trainman. I'll be glad to help anyone secure information or mementos of this road."

* * *

WHO can tell us the origin of the following old prayer? C. J. Scanlon, 1735 Pennsylvania St., Denver, Colo., says a framed copy of it hangs in the Old-Timers' clubroom at Union Pacific headquarters, Omaha, Neb.

"Now that I have flagged Thee, lift up my feet from the rough road of Life and plant them safely on the track of Salvation. Let me use the safety lamp of Prudence, make all couplings with the links of Love, let my hand lantern be the Bible, and keep all switches closed that lead off the main line into sidings with blind ends. Have every semaphore block along the line show the white light of hope, that I may make the run of life without stopping. Help me to use the Ten Commandments as a working card, and when I have finished the run on scheduled time and pulled into the terminal, may Thou, Superintendent of the Universe, say, 'Well done, good and faithful servant, come into the General Office and sign the payroll and receive your check for eternal happiness.'"

* * *

WHEN THE Chesapeake & Ohio's eastand westbound *George Washingtons* pass each other, their crews never see one another, unless they are not on schedule. According to the C&O employes' magazine, both trains start at the same time. At 6:01 p.m. westbound No. 1 leaves Washington, D. C., while eastbound No. 2 pulls out of Cleveland, O. Streaking through the night on parallel tracks, the two trains pass at Hilldale, W. Va. Here are located the Big Bend tunnels. No. 2 enters the west end of the tunnel at 1:03 a.m., while No. 1 comes out of the tunnel at 1:04 a.m. So the two crews don't see each other so long as they are on time.

TWO readers challenge the claim that Plant System engine 111, recently scrapped, attained a speed of 120 m.p.h., as stated in our article, "Road's End for the Old 111" *(March issue)*. We got our figures from D. S. McClellan, an Atlantic Coast Line chief dispatcher, who stated that he had been aboard the engine in the mail-contract race of 1901 and actually timed her. However, we made a mistake, for which we apologize. We said that the engineer "pushed the 111 for 13 miles in the amazing time of 2½ minutes." What Mr. McClellan told us was 5 miles, *not* 13. In this case 13 was our unlucky number.

Hotshot New Haven freight pictured in April issue *(page 128)*, was pulled by engine 3311; not 331, as the caption stated, reports G. F. Reichel, New Haven engineer, 415 Montauk Ave., New London, Conn.

Promontory, Utah, is where the last spike in the transcontinental railway was driven. Promontory Point, on the Espee main line, 37 miles away, is a different place. Thanks to Hugh F. O'Neil, Box 43, Montello, Nev., and to S. G. Morley, 2635 Etna St., Berkeley, Calif., for calling our attention to this inaccuracy in April issue.

* * *

FIRE-FIGHTERS are frequently indebted to the railroads for help in extinguishing blazes. The other day an Erie engineer, A. H. Lawrence, spotted a fire raging in a Catholic church at Dayton, N. Y. He gave long blasts on the whistle of his pusher engine, arousing the the local fire department.

Water was short; so the locomotive, manned by Lawrence, and also Engineer C. M. Pickens and Flagman E. H. Stack, made two trips from Dayon to Gowanda, filled the tank with water and brought it back to Dayton so the local men could pump it on the fire. Unfortunately, the church was destroyed, and houses on both sides severely damaged. Occupants of one of the houses, Michael Burns, a retired Erie railroad man, and his sister, Miss Anna Burns, were burned to death.

P. G. Needham, a fire-fighter of Sac City, Iowa, reports that one time in 1927 the volunteer corps to which he belonged was called to combat a conflagration in a stack of creosoted posts at Yetter, 16 miles from Sac City.

"We used up all our water," he writes, "but the flames still ran high. Then an Illinois Central freight crew cut off their train and ran the engine up to us so we could pump water out of the tender. That friendly act helped us to save not only those posts but maybe the whole town as well, since a fierce wind was blowing that day. On another occasion we were fighting a house fire when we ran out of water. This time a CMStP&P engine crew came to our aid, letting us use the water in their tender. However, I just about returned the favors, since I have twice ridden the ties in a fire truck to keep prairie fires from destroying railway bridges."

* * *

NAME three men prominently identified with U. S. railroad history. Sure, that's easy—Vanderbilt, Harriman, Hill, Gould, etc. But in a recent survey conducted by the *N. Y. Times* among 7000 college freshmen, only 7 percent answered this question correctly.

The students fell down woefully on nearly all phases of American history, but their ignorance of railroad topics was especially glaring. Great Northern railroaders will groan when we tell them that only 671 of the 7000 college freshmen correctly answered the question as to what James J. Hill was famous for. All but 1202 flunked on a similar question about Jay Gould. And only 11 in every 100 students were able to mention George Westinghouse's invention!

Any readers of *Railroad Magazine* could probably tell you readily that the first U. S. census in which railway mileage could have been reported was 1840, but many college students thought vaguely that railroads first came here in 1590, 1610 or 1650! However, students who fell down on the survey need not feel too bad, since even the *Times* itself stated that Jim Hill's chief claim to fame was the fact that he was a financier!

* * *

VICTORY-MINDED railroads, especially in the West, are doing more than haul essential freight and passengers. Many are inviting folks to plant Victory gardens for themselves on company soil without paying rent for use of the ground. The idea is, of course, to help alleviate the food shortage.

The Santa Fe is urging its 55,000 employes and their families to cultivate land on its 18,000-mile system in ten states. The Chicago & Eastern Illinois has set aside innumerable patches of land along its rights-of-way in Illinois and western Indiana. The Burlington is patriotically allowing the public, not merely employes, to plant vegetable beds on its property in half a dozen states. Union Pacific posters making a land offer to its employes carry such catch-lines as "Enroll now in the increased poultry production campaign" and "Potatoes have enlisted to lick the Axis." Canadian National employes are being encouraged to "stake out" right-of-way gardens along the CNR's 24,000 miles of system.

* * *

OLD turntable which the Espee replaced at Bayshore, Calif., wasn't exactly thrown into the scrap pile to fight the Axis, as Brian Fawcett hinted in his article "Turntables" *(April)*, according to word just received from J. C. Hammond, 1629 Morton St., Alameda, Calif. This table is now in service on a juice line. It is fitted against a twin table (comprising two girders) similarly removed from the Espee roundhouse at Tracy, Calif., forming the main units of the Richmond Shipyard Ry. overpass crossing the Espee main line near Albany, Calif. These old turntables are helping to defeat Hirohitler as they resound to the rumble of electric trains bearing workers to the shipyards.

* * *

NOW we come to the song and dance about the Reader's Choice coupon *(page 161 every month)*. The purpose of this is to guide the editorial crew in selecting material for future issues. Some rails and fans use the coupon. Others prefer not to clip the magazine; they send us home-

made coupons or express their choice in letters and postcards. Regardless of how votes are sent in, all count the same. Results of balloting on our May issue show the following titles listed in order of popularity:

1. True Tales of the Rails
2. Wartime Advertising, *Hubbard*
3. Light of the Lantern
4. On the Spot
5. The Picked Crew, *Mosler*
6. Electric Lines, *Maguire*
7. Right-Hand Side, *Keith*
8. Motive Power of NYO&W
9. Railroad Camera Club
10. Locomotive of Month
11. The Callboard
12. Model Railroading
13. Along the Iron Pike, *Easley*
14. Rip-Track Album

* * *

PHOTO-OF-THE-MONTH is Gerald M. Best's action shot of an Espee fast freight on page 142, which received more than twice as many reader votes as any other photo in May issue. Runners-up are the pictures on pages 120, 108, 152, 145, 90, 139 and 140-141. (Votes for "Locomotive of the Month" are counted only in the above popularity list, not as photo votes.)

The Reader's Viewpoint

ALTHOUGH this country is engaged in a critical fight for life against the most notorious international gangsters in all history, there are some forces—small in number, but powerful in wealth and influence—that are sabotaging our national unity by carrying on a vicious and unprincipled propaganda attack against organized labor in general and railroad labor in particular.

You have no doubt read or heard about the article in the March issue of *Reader's Digest,* entitled "'Featherbedding' Hampers the War Effort." This is nothing more nor less than a rehash of untruthful propaganda inspired by the Association of American Railroads and intended to prejudice the public against railroad workers at a time when a railroad wage movement is in progress.

I have received many letters and telegrams from our membership, asking that an appropriate reply be made to the labor-baiters. The best answer to such propaganda is to give the public the facts—not fiction—and that is where your cooperation is needed.

There has been established in the Grand Lodge offices a BRT War Emergency Department, staffed by competent writers and analysts, who are prepared to utilize the following information which you are asked to furnish:

1. Report any accidents or delays in the movement of trains for which the management is responsible and which are hampering the war effort.

2. Report any serious problems encountered at the away-from-home terminals, including lack of housing and restaurant facilities. Indicate whether the management has refused to alleviate conditions.

3. Report instances of waste of manpower, such as delays at the away-from-home terminals or in getting into yards.

4. Report any situations in which employes are maltreated, are not given adequate care in hospitals, where railroads have skimped in making settlements for injuries, or where discipline has been extremely harsh; in short, report every unethical practice of the railroads.

The railroad workers of this nation are handling the greatest amount of transportation in the world. They are doing it efficiently and loyally, but they are handicapped by sniping on the part of railroad management and its hirelings. Let us expose this unpatriotic propaganda barrage which has been leveled against us! Let us highball to victory! — A. F. WHITNEY, President, Brotherhood of Railroad Trainmen, Cleveland, O.

* * *

INFORMATION wanted on the Clover Leaf RR. (now the Toledo-St. Louis line of the Nickel Plate). Compiling a history of the road, I have some information but want to know especially: when were the Delphos-Kokomo RR., the Toledo, Delphos & Burlington, the

Toledo, Dupont & Western and the Toledo-Charleston & St. Louis railroads formed? What became of the narrow-gage engines that ran on the Toledo, St. Louis & Kansas City.—Roscoe R. Hikman, 51 Union St., Ecorse, Mich.

* * *

"RIGHT-HAND SIDE" by Homer Keith *(May issue)* appealed to me, since I am an engineer with less than two years' experience. One important caution he forgot: Watch the water frequently. Be sure your injector steam valve handle is all the way open so as to close the overflow valve. With the overflow valve partly open, water would go on the ground instead of to the boiler. Recently I had a pertinent experience while driving a Mother Hubbard type engine equipped with composite injectors which feed through a common boiler check. The line check stuck open, permitting the opposite injector to drop all water down the overflow. To eliminate the condition, I had to close the overflow valve of the injector to the defective line checks. As required, I reported the occurrence at the end of the trip.—Warren B. Crater, *(engineer, CNJ)*, 270 W. Colfax Ave., Roselle Park, N.J.

* * *

CHOICE of five different roads for the 20-mile trip between Suffolk and Norfolk, Va., as mentioned by F. E. Thompson in April issue *(page 122)* is nothing at all. All of the following roads run between Chicago and Hammond, Ind., about 20 miles apart: B&O; Cincinnati, Indianapolis & Louisville; Erie; B&O Chicago Terminal; EJ&E; Indiana Harbor Belt; Michigan Central; Nickel Plate; CSS&SB; Wabash; NYC; Pennsy; Pere Marquette, and C&O. Chicago street cars ran into the Hammond business section until the tracks were taken up in Hammond last year. As it is, these tracks still touch Hammond city limits.—Harry E. Entler, 6412 S. Aberdeen St., Chicago.

* * *

SPEED RECORDERS now being installed in New York Central passenger engines register up to 120 miles per hour. The old instruments went only up as high as 90. A sign of the times: I remember when the NYC had over 150 engines in storage around Cleveland. Now there are but two, both small Atlantics too light to haul heavy wartime trains.—Wm. Surdyk, 11403 Rosedale Ct., Cleveland, O.

* * *

"WARTIME RAIL ADVERTISING" in the May issue is an excellent analysis. I've been studying the subject for years, so I can appreciate the thoroughness of that article. Besides asking the public to limit its travel, railroads should make a special effort to keep cars—especially on troop trains—clean and supplied with such necessities as water, towels, etc. In addition, if they want to retain goodwill, they must keep stations clean and painted, try harder to get passenger trains in on time, advertise still more for folks to keep off the rails, and require employes to extend courtesy as usual to travelers, even though the railroads don't need the business as badly as they did before the war.—E. F. Gardner, PRR Passenger Traffic Dept., 30th St. Station, Philadelphia, Pa.

* * *

COLD locomotive running without steam, mentioned by Stanley Znidar *(page 138, May)* is paralleled by a locomotive I heard of which would start up every night of her own accord, roll down the track a quarter-mile, then stop. Grease monkeys couldn't find the source of these actions. They even tried chaining the wheels to the tracks to keep her from running off. Finally, they found the trouble in the rod that leads from the throttle through the boiler and to the throttle valve in the front end. The hostler would put water in the tank and set the engine on a siding every evening, then fill the boiler. Cool water on the throttle rod would contract it, causing it to open the valve.—Hollis T. Whitmore, 292 Hawthorne St., Elyria, O.

* * *

DON WATERS, the ex-boomer nut splitter mentioned in your May issue, is still writing occasional adventure yarns, but not on rail subjects such as those he used to do for *Railroad Magazine*. His latest work is pretty full of lore of the sea.—Claude Warrington, 3 Monroe's Cabins, Estherville, Iowa.

* * *

FANTRIPS I used to take in civilian life have nothing on the railroad sights I've seen while in the Army. The Army

air base at Salt Lake City, where I was stationed for a time has a mile and a quarter of standard-gage railroad, bringing in coal and other essential freight. Trucks used to transport troops to and from the base. Now the railroad saves that expenditure of gasoline and tires.

Star performer of the pike is engine 6913, *Little Goliath*, a six-wheel switcher which Uncle Sam bought from the Escanaba & Lake Superior. This 73-ton girl, with top pressure of 175 pounds, keeps vital material moving into the base 24 hours a day.

The air base is proud of its all-soldier crew, which was trained by Tech. Sgt. Wilber House, a former Espee brakeman. Several others were rails in civilian life, too. Corp. James J. Byrnes was a brakeman "then and now," while the three firemen all had experience. Pfc. James B. Childs was a hostler at the C&O roundhouse at Logan, W. Va.; Pfc. Thurman Starling was a machinist's helper on the N&W, while Pfc. Robert Colton used to fire Mississippi River steamboats.

When I left the air base we had fifteen tourist Pullmans full of soldiers going out. *Old Goliath* tried her best to start, but it was too much for her. So she pulled the train in two sections as far as the Denver & Salt Lake interurban tracks. Then, with the help of an interurban car, she hauled the fifteen cars into Salt Lake station, where a mighty 4-8-4 took over. Four or five of our Pullmans were equipped with three-decker single beds placed crosswise the entire length of the car.—Pvt. O. H. Borsum, Army Air Base, Blythe, Calif.

* * *

WITH our Navy slugging the Japs in the south Pacific, the Nipponese are working frantically to build a railroad from Canton, China, through Indo-China and down the Malay Peninsula to Singapore. This news comes from my brother, who is overseas. My brother reports that as their sea lanes became more and more precarious, the Japs see their only hope in such a rail line to provide an all-land route for extracting rubber, tin, oil and other resources from the territories they have conquered. One of the next objectives on the Nipponese war program is the conquest of the south China coast, to give her a continuous roadway from Canton to Singapore. This is one iron pike that would not meet with the approval of any American railfans.—Wm. A. Rutledge, 3rd, 6877 Yeager Place, Hollywood, Calif.

* * *

TRUCKS are often transported by rail, but here's a case of a trucking company getting the job to carry a locomotive. Engine No. 3 of the Riverside Portland Cement Co., an 0-6-0-T built by Alco in 1923, was sold recently to a southern California shipyard. The Belyea Trucking Co. supervised the loading of the engine on a Grand Trunk Western flatcar at Victorville, Calif., where the engine had been in service. The Santa Fe hauled her to Los Angeles, then the Espee took her on to a coast city where the trucking company delivered her to the shipyard. Whoever heard of another engine being "transported" by truck?—H. L. Kelso, 1735 E. 69th St., Los Angeles.

* * *

IMPORTANT feature of an *order bill of lading* not touched on by F. E. Snyder *(page 146, May)*: It is a negotiable instrument. Like a check it is made out to the order of someone, usually the shipper. Once receipted by the carrier it is no good until the *order party* has endorsed it. He may endorse it in blank by simply signing his name on the back, in which case delivery of goods will be made to whomever presents the bill of lading. He may endorse it to the order of another party, who in turn could also endorse it.

I have also heard of a shipper receiving an order and check from some unknown person asking for shipment of goods. The shipper uses an order bill of lading in shipping, holds it until the check clears, then endorses the order bill of lading and sends it direct to the consignee. If the check bounces, the shipper sends the order to the carrier who returns the goods to him.—Morris W. Abbott, 23 Bedford Ave., Milford, Conn.

* * *

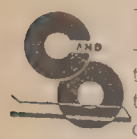
WHEN the circus came one summer day about 30 years ago, there was quite a stir. Hearing an engine whistle blow continuously, townspeople ran to the top of the hill to see if there was a wreck or perhaps a fire on the railroad bridge. Soon a little locomotive came prancing along the tracks, gaily painted red with gold striping. We all raced to the station and watched the roustabouts unload a carload of red Brahma

steers. The cattle were so mean-looking that I beat it, missing most of the subsequent unloading.

While I am harking back to the old days I recall an ancient fellow named Bob White (not the GTW king snipe now in the Army) who used to carry mail from the trains to the post office. Somewhere Bob had picked up a metal shield which he proudly wore on his hat proclaiming him to be "White's Transfer." The train from Boston would have a meet with the train for our town at Elmwood Jct. One evening the local crew was evidently in a hurry. Deciding there wouldn't be any passengers for them on the Boston train, they left early. Old Bob happened to be on the Boston train. When he found the local had left without him he was furious. Adamant in refusing to ride the 15-odd miles in a buggy, he exercised his legal rights and had the train back up for him. Even though he was the only passenger, he wasn't alone upon his arrival in Hillsboro, as the town military band turned out to welcome him.

Another incident I remember from those leisurely days: The brakeman on the through train pulling the rope for a stop, then ambling out into a field and picking strawberries. After he had eaten his fill, the shack let the train proceed. Elmwood Junction was rather important, at least to my fellow townsmen, but it still clung to the old red-ball system long after most stations graduated to semaphores. I wonder if that red ball is still there?—RAPHAEL H. TURINI, Hillsboro, N. Y.

* * *



FAMILY crews in railroading? We have plenty of them in the Chesapeake & Ohio's telegraph department, Chicago division. E. A. Middlekamp, 3rd trick dispatcher, has a son, H. M., on the extra list.

The agent at Miami, Ohio, H. E. Cain, has a son who is agent at Merrillville, while another son and his wife work the extra list. Mr. and Mrs. D. J. Belbo hold two tricks as operators at Beatrice, Ind. Two brothers names Knipp are agents: W. A. at LaCrosse, Ind., and J. F. at Converse, Ind.

C. M. Hyman, brass pounder at Converse, is the father of N. M. Hyman, who tickles the key at Towerton, Ind.

The first-trick op at Medford, Ind., S. F. Beeson, has two cousins (both brothers) who are telegraphers at Losantville and Williamsburg, Ind.

T. F. Hatfield, the C&O agent at Barth, Ind., has a son working the extra board. M. O. Wolfe, op at Okeana, O., has a son who is a furloughed C&O operator—now in the Army.

J. E. Winkler, second-trick man at Cheviot, O., has a son, R. D. Winkler, on the third trick at Converse, Ind.; while G. I. Morris, Jr., third-trick man at Cheviot, is the son of a main-line dispatcher.

The two Adkins brothers, brass pounders at Fowlerton and LaCrosse, Ind., have cousins, J. A. Adkins and H. L. Brooks, on the extra board.

Now working as ticket agent at Marion, Ind., I expect soon to be third-trick operator at Economy, Ind. My son, C. L. Gibson, works the extra board.

Can any other pike boast so many relatives in one branch of service and on the same division?—CHAS. F. GIBSON, Marion, Ind.

* * *

LETTER in a recent *Spot* department referring to old times on the D&RG, brought an appreciative chuckle from me when the writer, C. H. Baker, commented that he never met Superintendent Ridgway but had heard the men speak of him as a fire-eater.

Many stories are told of Colonel Ridgway's famous temper. One has to do with his son, Carl, who was Assistant Super. The Colonel was more exacting with his son than he was with strangers. Although Carl was a smart railroader, he frequently caught a blast of the Old Man's ire and often got fired. Carl always returned to his job after two or three days, and he and his dad acted as though nothing had happened.

Eventually young Ridgway got fed up with his father's irascibility. One time after the Old Man had fired him, a week passed and Carl didn't show up at the office. The Colonel wondered what was wrong. Then he learned what was already common knowledge in Salida, that Carl had gone firing for the master mechanic. The Old Man gave his son a hearty bawling out, demanding to know why he was shirking the responsibility of his regular job. Carl said the Assistant Super job could go in the scrap can for all he cared. Then the Old Man

ESPEE oil-burner's number is famous as a date in U. S. history. Engr. Dave Welch, who sent this photo in answer to E. W. Pugh's true tale in March issue, tells us the 1776 has been in service nearly 41 years

played another card. He told the M. M. to hire his son, so the latter would have to return his desk job. But the M. M. sympathized with the youngster, which caused him to feel some of the Colonel's wrath. I don't recall what the final outcome was.

Probably Carl went to another railroad. I do know he was later A. C. Ridgway, who built the Cripple Creek short line and had much to do with construction of the Moffat Road. He wound up his railroad career with about 20 years as Operating Vice President of the Rock Island.

The Colonel had two other sons. Will Ridgway was Superintendent of Motive Power on the Colorado & Southern, while A. O. Ridgway is a consulting engineer to the D&RGW.

I had a set-to with the Colonel myself, when at the age of 15 I went fishing in a river several miles above Salida. It turned out I was trespassing on the Old Man's private fish hatchery. He caught me at it and gave me a fierce tongue lashing. Even though he had retired from the railroad then the strength of his anger had not diminished. —J. T. Patterson, Mechanical Dept., Norfolk Southern Ry., Norfolk, Va.

* * *

DO AUTOMOBILES have right of way over trains anywhere in the nation? Just west of Hillsboro, the B&O crosses over the N&W tracks, and this point is just a few feet south of highway 50. Since there are only two trains a day, one on each railroad, no crossover tower is needed. There is just an old-type gate, which the train leaving town always closes behind it so the next incoming train will have the right of way at the crossover. The railroads erected stop signs at the approaches to the crossover. Since the highway is so close some folks think the signs warn trains to stop for the automobiles.

"Believe-it-or-not" Ripley wrote up this spot as a crossing where cars have right over trains, but I believe the signs control the crossover and not the highway crossing. What do readers think?—John L. Smith, Hillsboro, O.

* * *

BONER which railroaders can easily spot appeared in a recent movie, "Casablanca." Humphrey Bogart suggested to Ingrid Bergman that they get married on the train to Marseilles—get the engineer to perform the ceremony. "Captains of steamships can marry people," said Humphrey, "so why not engineers of trains?" Well, the engineer is not "in command" on a train. The conductor is the railroad equivalent of a ship's captain.—Charles T. Ware *(Cotton Belt brakeman)*, Jonesboro, Ark.

* * *

THIRTY-SIX cars made up the longest passenger train I ever saw. This was an empty troop train pulled by a 2900 type 2-10-2 freight engine on the Illinois Central. Returning from Louisville to Fort Knox, Ky., the engine wasn't overtaxed, since the entire 30 miles is downgrade. Anyhow, this beats the 32-car train mentioned by George Beater *(page 138, May)*.

Here are some depots with street numbers, supplementing lists in recent issues of *Railroad Magazine:* Md. & Pa., 73 N. Main St., Red Lion, Pa.; Louisiana Southern, 6215 St. Claude St., New Orleans, La.;

AB&C, 200 N. First St., Birmingham, Ala.; Louisiana & Arkansas, 701 S. Rampart, New Orleans, La., and Reading Co., 552 N. Prince St., Lancaster, Pa.—GEORGE LINDSEY, Harrisburg, Pa.

* * *

MOGUL engine which Edmund W. Pugh delivered from Baldwin Locomotive Works to the Southern Pacific shops at Los Angeles in 1902 (*"Chaperoning a Mogul," March '43)* is still serving under the same patriotic number, 1776. She is now assigned to the Sacramento Division, where she gets various jobs, mostly hauling through freight between Roseville and Tracy. I took a picture of her at Chico, Calif., last year, when she was rolling on the Sterling City branch (the old Chico & Northern RR.) between Barber (Chico) and Sterling City.

Most of the Moguls, ten-wheelers and Consolidations are equipped with a combination pilot and footboard on the rear of the tender so they can be used for yard or road service. You may see one of these girls switching boxcars one day, and spy her at the head of a string of varnish the next day. Although I made many trips with the 1776—on both sides of the cab—I don't recall whether or not she was equipped with a superheater when delivered from the factory. However, here are her present specifications: Class M-8, cylinders 21 x 28, drivers 63 inches, weight 184,700 pounds, tractive force 33,320 pounds, steam pressure 200 pounds; superheated.—DAVID J. WELCH *(Espee engineer)*, Box 396, Tracy, Calif.

* * *

AN OLD friend of mine who used to work out of Salida, Colo., identified some of the men shown in the D&RG photo in your February issue, page 84. Draped around the headlight of No. 213 are Engineer Steve Vail and Fireman Oscar Youngberg. James Howell, another engineer, still living, stands to the left of 576's smokebox. The lad seated on the step of engine 218 is Fireman Will Furniss. This picture is probably 45 to 47 years old, as Furniss was promoted to hogger in 1897.—VERNON GIPSON, 1934 Tanby, Chicago.

* * *

HAPPY days on the old narrow-gage Denver, South Park & Pacific are recalled by a letter I received from a friend who was present at the celebration marking the South Park's entry into Gunnison, Colo.

"The town was wide open that night," he relates. "Hundreds of boxes were piled up in the middle of York Ave., near the railroad, and set afire. On either side of the roaring flames were long rows of beer kegs, all inviting the thirsty—and, believe me, there were plenty who acted as though their throats were in need of the freely flowing beer. The Mayor was one of the most noted of the celebrators. I can still see him mounted on a poker table in the midst of the throng, haranguing the multitude. It was a gay day for Gunnison when the first train entered the town."—WM. B. THOM, New London, O.

* * *

AS A TRAIN RULES examiner on the Reading Company's Reading Division I am interested in the article by Homer Keith, Rock Island engineer, "So You're Taking over the Right-Hand Side *(May issue)*. I note that this is the second of a series of articles written by veteran railroaders for the benefit of students and recently promoted men. Would like to buy a copy of the first in this series. *("Letter to My Nephew," by Bill Knapke; it has been sent to you—Editor.)* At present we are promoting firemen to enginemen and I make each of the men read Keith's article. They enjoy reading this, as there is much good in it. The article contains information that I might otherwise forget to call to the men's attention.—CHARLES W. STRIEGEL, 519 Schuylkill Ave., Pottsville, Pa.

* * *

ATLANTIC & PACIFIC wreck which occurred near Franconia, Ariz., about 40 years ago has been mentioned several times in *Railroad Magazine*. I was then an engineer on the A&P (now Santa Fe) and can vouch for the following account:

Train 3, pulled by engine 493, left Seligman, Ariz., with a one-hour run-late order. In the 37 miles between Seligman and Peach Springs, Engineer Jim Williams lost 15 minutes because the 493 was steaming poorly. The dispatcher put out another order, at Hackberry, 24 miles further down, to run 70 minutes late. Expecting No. 3 to lose still more time through the Hulapai Valley, he issued a subsequent order to run 80 minutes late from Kingman to Needles. The dispatcher had reversed the right of two trains. With the extra time allowed No. 4,

ATLANTIC & PACIFIC equipment littered the right-of-way in the Franconia wreck of 1902, as evidenced by this sketch based on a photo from T. E. Gallagher

the train opposing 3, could make Franconia and get into the clear.

Jim sped through the valley, however, and arrived at Kingman only 74 minutes late. Leaving within three mintes, he evidently overlooked the last run-late order he got, for he dropped down the hill fast, picking up time, and passed through Yucca—25 miles further on—five minutes ahead of his run-late order. There was a double-header freight train, eastbound, in the Yucca siding. Both engineers, Pat Greaney and Pete Peterson, glanced at their watches when No. 3 slid past, so it was undisputed that Williams was running fast. As the operator did not immediately OS train 3 by, the dispatcher didn't catch on. When the op at Franconia OS'd the train by, the dispatcher told him it couldn't be No. 3, which wasn't due for eight minutes. Shortly afterward the brass pounder heard the crash and saw a big cloud of steam around the curve two miles below him. He knew then it was No. 3, and she had hit train 4. The dispatcher immediately ordered out the wrecker from Needles.

Williams jumped while his train was doing 50 miles per hour. Lighting in soft sand, he was uninjured. Fireman Goldsmith was killed instantly. Conductor Higgins was burnt so badly he died soon afterward. The three engines, Williams' 493 and the two which were hauling train 4, the 444 and 450, were reduced to a big heap of scrap packed in a space of about 100 feet. A wheel in the foreground of the picture was an engine truck wheel. Even though it had been originally pressed on the axle with 60-ton hydraulic pressure, the impact of the collision knocked it back on the axle fifteen inches. The boiler of the 444 blew up and landed 100 feet from the track.

I was slated to pull train 3 out of Needles. In fact, I already had my engine out in the yard when Superintendent John Denair came over and told me of the wreck. He gave me the news that all six men in the engine cabs had perished except Williams. I had roomed with one of the hoggers, Pat McElligot, in Seligman not long before.

Well, I pulled the wrecker out to help salvage the train and the bodies of my fellow railroaders. I have seen many wrecks, but that Franconia disaster was the most gruesome of all. We never even found the bodies of four of the men. Those we did locate were burned or mutilated almost beyond recognition. At the investigation it was decided that the wreck had been caused by Williams running ahead of his orders and him and Conductor Holmes overlooking it. —T. E. Gallagher, Box 126, Mojave, Calif.

(Editor's note: Additional facts about the Franconia wreck may be found in a true tale by Clifford Funkhouser in our Aug. '42 issue.)

* * *

WRECK strewn along the Great Northern right-of-way was an unexpected sight I saw during a Sunday auto ride on February 28th. About a mile east of St. Cloud where the tracks run close to the highway, I saw a string of derailed freight cars. Several gondolas were smashed up and their coal strewn along the tracks. The wrecker had not arrived yet. Shortly afterward it came steaming along—the big hook had had to wait eight hours for an engine to pull it. Driving away from the site of the mishap, 25 miles east of St. Cloud, I passed an engine laboring along with some of the cars which had not been damaged.—L. James Keehley, Jr., 312 Fourth Ave., N.E., St. Cloud, Minn.

Battle Stations

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PUBLISH more yarns by William J. Parry, like "His Brother's Son" *(Feb. '43)*, we are urged by Francis Smithson, 1616 Ouelette Ave., Windsor, Ont., Canada, and Gunner F. H. O'Neil, H3556, 77th Battery R.C.A., 3rd Field Regt., Canadian Army Overseas, 1st Div.

Francis says that besides being an able Canadian National engineer, Bill is popular as a speaker at young peoples' club meetings. He says that Bill had a close call early this year when he plowed into the tail end of a freight in a blinding snowstorm. The caboose and the car ahead of it caught fire. Bill had to crawl under the blazing crummy to repair a broken pipe on the front of his engine before he could back his train away.

"Bill's stories make me feel I am back railroading again," recalls Gunner O'Neil. "One day I was tending the middle switches and a Grand Trunk ore drag got away at Copetown, Ont., because the conductor pulled the air in the tail end and left it open without giving the hogger a chance to pump up his air lines again. They would have stopped, but Yard Foreman J. T. Green was in a hurry. Consequently, the ore train pushed right through a carload of cement."

* * *

IMAGINE two New Zealanders meeting each other through a magazine published in the United States! I recently contacted a fellow railfan named Ted Lambert, in my country. But for the Railroad Camera Club we probably would never have heard of each other. All the employes at the station where I work are interested in seeing my copies of *Railroad Magazine*.—JAMES GALL *(junior porter, N.Z. Govt. Rys.)*, 17 Selkirk Rd., McAlbert S.W.2, Auckland, New Zealand.

* * *

HOODOO numbers don't terrify the Canadian National. Several times I have seen oil trains pass here, pulled by engines 2413 and 2713. Recently I saw a CNR engine pulling 20 American boxcars, not one Canadian car in the train.—JOHN F. POTTS, Box 4, East Coulee, Alta., Canada.

* * *

I AM one British flyer who thinks highly of American railways, even though John Byard *(page 134, April)* says they are slow and bumpy. Naturally, the longer gradients here make many trains run at speeds which would seem slow in England, but you still have fast trains which can beat ours. For instance, we can't compete with the Burlington *Zephyrs*. Before volunteering for the RAF, I worked in the LMS traffic department around Manchester, England. I am still on the books, and the company makes my wage up to its former level while I serve with the Air Force.—L. A. C. GREEN, 1684007, No. 8 B.L.G. School, Lethbridge, Alta., Canada.

Photo by Robt. R. Brown, 700 St. Catherine Street West, Montreal, Canada

CPR 2513 (formerly 1163, 1113), built by company shops in 1907, poses for her picture at Fredericton Jct., New Brunswick

On the Spot

LATEST in British passenger power is the LNER'S *Cock o' the Walk* class. These 3-cylinder 2-8-2 engines pull from 17 to 21 coaches on the Aberdeen-Edinburgh run. They are the first 8-coupled passenger locomotives to appear on British railways. —SGT. E. H. CROOKS, R.A.F. Delegation, E. 6, Third National Bank Bldg., North Main St., Dayton, O.

* * *

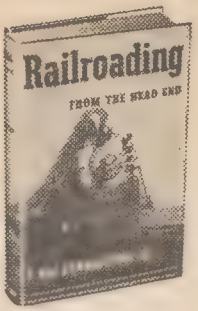
HISTORY was made last December 11th when, for the first time, an American-built locomotive steamed into the Great Western's Paddington (London) station, draped with the Stars and Stripes and a Union Jack. First to arrive of a batch of engines the U. S. is sending to England to help win the war, this powerful 2-8-0 freight-hauler is numbered U.S.A. 1604.

Seven more of these engines have been delivered by now. They are 60 feet long, weigh 130½ tons, have a tractive effort of 31,500 pounds, and can pull up to 1500 tons. Their tenders hold 9 tons of coal and 5400 gallons of water. I have a couple of booklets about British railways in wartime which I'd be glad to send to any two American fans who send me pictures of locomotives or any kinds of magazines for inmates of British hospitals.—ARTHUR RICHARDS, 21 Briarfield Rd., Tyseley, Birmingham, England.

* * *

BRITISH locomotives are okay, except for their "peanut-roaster" whistles. Recently I had the thrill of hearing an American whistle on an engine in England. I was riding in a train pulled by one of the Southern Railway's new Pacific engines—a real 4-6-2 with Box-Pok driving wheels. As a favor to a homesick American, the engineer obliged me by blowing the melodious whistle while traveling along at 70 m.p.h. These engines of the Merchant Navy class were discussed by Arthur J. Richards in "On the Spot" *(March issue)*.—LT. VINCENT H. QUAYLE, Electronics Training Group, APO 640, U.S.Army, via New York City.

(Editor's note:- Lt. Quayle's letter came to us by V-mail, which is the quickest method for Americans to write to service men abroad and for U. S. soldiers and sailors to write home. It costs only 3c to send a letter by V-mail, but you must get special paper at the postoffice or buy it at a stationery store. The letters are photostated, reduced in size, so as to take less space in mail-planes.)



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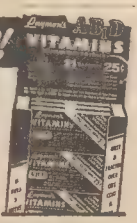

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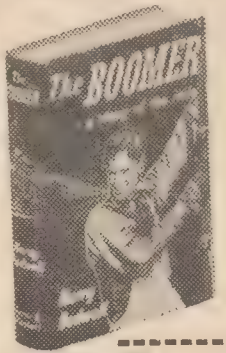

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(*)ERNEST K. GIBSON, 520 Whitney St., Louisville, Ky., wants info. and size 616 pix LA Ry.; also any size pix and info. of TEP Co. (Nashville). Will trade Louisville route map for one of your city.

(*)BOB GIGLIOTTI, 711 Isabella Rd., Connellsville, Pa., trades or sells at 12c ea. West Penn negs., size 616 for juice or steam negs. same size. Send stamped env.

(R)R. W. GISH, 2 Silver Lane, Kirkwood, Mo., will buy or swap MoP loco pix, size 616, for *Railroad Magazines*, good cond., entire year '36 and on back. Also *Baldwin Loco.* mags.; R&LHS Espee Bulletin.

(R)W. E. GLOEB *(trainman)*, Rt. 5, So. Omaha, Neb., offers 60 *Railroad Magazines*, 1935 to '43, 10c ea., 15 *Off. Guides*, 75c ea., or will trade for 20 loco pix, p. c. or 616 size; UP tts., 10c ea., 3 for 25c; L&N, N&W, and ORC and BRT mags., 5c ea. plus postage.

(*)ROLF GOERCKE, 176 Smith Ave., Kingston, N. Y., will buy trolley pix and negs., any size, of aband. Kingston Consolidated RR. or predecessors; also Colonial trolley tunnel. Wants history, equipt., roster, tts., transfers, anecdotes of this line; also pix and roster of aband. Monmouth (N. J.) Elec.

(*)Cpl. F. J. GOLDSMITH, Jr., 139-42 58th Ave., Flushing, Long Island, N. Y., wants *Off. Guides* before '25. Also tts. of all interurban lines before '35; tts. of NYC, CNE, NY&NE, and short lines in N. Y. and northeast; and maps of elec. lines.

L. S. GRAHAM, P. O. Box 311, Coquille, Ore., will buy pix of Lawndale narrow gage.

(R)STAN GRIFFITH, Ashton, Ill., offers full set '41 and '42 *Life* mags., 48 of 1940, six '39, and 50 *Sat. Eve. Posts* for *Railroad Magazines* before Dec. '37.

WM. A. GRIMM, 204 Gregory Ave., W. Orange, N. J., will sell rr. *Quiz* mag., questions and answers, 25c; *Yearbook RR. Info.*, 35c. Will buy DL&W rulebook.

C. C. HAGER, 2 W. Howard St., Hagerstown, Md., offers cash for all sizes B&O loco pix.

(R)J. C. HAMMOND, 1629 Morton St., Alameda, Calif., will buy *Railroad Magazine* for Dec., '29; Ap. thru Nov. '30; Jan. thru Dec. '31 exc. Feb., Aug., Oct.; Jan., Feb., May, Aug., '32; March '33. Good cond., unclipped; covers unnecessary. Will trade Aug. '39; March '40; Jan., Nov. '41 *Railroad Magazine*, good cond. No pix to trade or sell.

(*)ALLEN F. HIBBARD, 468 Carlton St., Buffalo, N. Y., will buy interurban pix of Lockport & Buffalo and Buffalo Lake Erie Traction Co. 600 type cars, any size.

(R)WM. HIGGINBOTHAM, Apt. 255, 219 S. Witmer St., Los Angeles, will buy Dec., 1933 and Jan. '34 *Railroad Stories*, good cond. Wants short-line emp. tts.

HANS HINRICHS, 20 Carroll Ave., Takoma Park, Md., (formerly of St. Louis) cannot continue neg. and print exchange. Will sell 1938 *Locomotive Cyclopedia* to best bidder. Creditors, cash or pix, write.

J. HOFFMAN, 545 S. Peoria, Tulsa, Okla., wants to buy p. c. size pix of Alabama short lines, GM&O, UP, L&N, NC&St.L.

(R)O. H. HOLLOWAY, 522 Mt. Holly St., Baltimore Md., will buy June and July '34 *Railroad Magazine*.

(R)BOB JENNINGS, 108 Grove St., Putnam, Conn., will trade 35 back issues of *Railroad Magazine*, Nov. 1939 to date, for 100 eng. pix plus postage; or will trade issues from Nov. '39 to March '42 for 3 pix ea., and from Ap. '42 to date for 5 pix ea. Good cond.

A. E. JONES, 4033 Carpenter Ave., N. Y. City, wants size 116 or p. c. pix, left and right views: CNJ: 4-4-2, P7s; 4-8-0, 2-8-2, M3as; 4-6-2, G4s; also NYC: 4-6-0, F12g; 4-6-2, K5a, K5b, K6; Erie: 4-6-2, K5a; and B&A, 590, 4-6-2 only.

(*)E. D. JONES, 427 Osborne Ave., Verdun, Que., Canada, will send list and sample for 10c; size 116 pix CNR, CVR, GTW, TH&B, and elec. cars of M&SC, LE&N, OE, Montreal Tramways and Grand River. Also sells negs. of MT cars.

PFC GUSTAVE JOHNSON, Md. Det. 2572 S. U., Ft. Belvoir, Va., buys recent emp. tts. of RF&P, West Md., DM&IR, Middle and Pittsburgh divs., and Rdg. Shamokin div.

F. G. KARL, 919 N. 6th, Sheboygan, Wis., buys or trades size 122 negs. C&NW engines now scrapped.

L. H. KEARNS, 22 Mineral St., Springfield, Vt., wants B&A pix taken on Ware River branch before 1921.

EDDY KERRIGAN, Jr., Box 364, Noroton Heights, Conn., buys condr., trainman or baggage-master hatbands, any roads. Good prices.

(*)E. B. KILLE, 8215 2nd Ave., Inglewood, Calif., will buy or trade for any size pix or negs. old Glendale & Montrose Elec. and any n.-g. pix or negs. Offers SP n.-g. and D&RGW n.g., size 116.

(*)JOHN KNOWLES, 194 Grenadier Rd., Toronto, Canada, will buy CERA bulletins Nos. 1, 7 and 17, and size 116 pix of Indiana RR., C&LE, and predecessor lines; or trade size 116 Canadian steam and elec. pix.

Tech. Sgt. OSCAR KRAINES, 32118643, 21st General Hospital, APO 700, c/o Postmaster, N. Y. City, wants rr. and hobby mags.

(R)CHAS. T. LANG, *address omitted.*

MELVILLE LANGHANS, 6340 Justine St., Chicago, will buy Myers' *History of Transportation in U. S. before 1860.*

(*)FRED LEVIN, 11 E. Delaware Pl., Chicago, wants pix of abandoned juice lines near or in Cook County and Chicago, and of Aurora Elgin & Fox River Elec.; also Chi. A&E between 1902-'15.

(*)Pvt. IRVING D. LEVY, Co. B, 28th Sig. Tng. Bn., C.S.C.R.T.C., Camp Crowder, Mo., wants to hear from juice fans. Answers all mail.

KLINE G. LIMBERT, Box 348, Harvard, Neb., buys loco pix, p. c. size, of S. E. roads. What have you?

F. G. LISTER, Supt. Motive Power, Frisco Lines, Springfield, Mo., wants old books on locos and loco designs; also pix of old locos.

JACK MACK, Box 212, East Orange, N. J., trades Pennsy and articulated loco pix, size 116, for those of Lackawanna, UP, SP, NP, or AT&SF.

(*)RANDOLPH MATHEWSON, Box 33, Durham, Conn., trades pix, sizes 120 to 4x6, of Conn. Co. trolleys formerly running in and between Norwich, New London, Willimantic, Middletown, and New Britain, for pix of Hartford and New Haven trolleys.

(R)ROBT MULFORD, Box 104, Winthrop, Iowa, will sell 67 issues *Railroad Magazine*, Nov. '37 to date, good cond. for best lot offer. No single issues sold.

SCOTT NIXON, SFC Bldg., Augusta, Ga., wants to buy 35 mm. or Bantam size 2x2 transparent slides of train scenes in Kodachrome or black and white.

(R)FORREST W. OWEN, 508 Ashland Ave., Elgin, Ill., has for sale many back issues *Railroad Magazine*, from July '37 on.

(*)Lt. RALPH M. PARK, Kemper Military School, Boonville, Mo., sells size 116 pix of IC, CMSP&P, and North Shore Elec., 10c ea. Also misc. rail and wreck pix, some old. Send for list.

ALBERT PARKER, 1198 Stitt St., Wabash Ind., has B&O, Wab., and NYC train orders to trade for those of other roads, U. S. or Canada.

(R)BUD PARKS, Ft. Rock, Ore., wants Aug. '35 *Railroad Magazine* (GN roster) and March '39 (SP&S roster).

(*)ANDREW PAYNE, 3 Paxton St., Leicester, Mass., sells size 120 pix of B&A and B&M locos and Worcester streetcars, or trade for pix of other rr. or elec. line, pref. 120 or larger; esp. SP, AT&SF, UP, D&RGW, PE.

L. PENNINGROTH, Rt. 3, Larimore Rd., St. Louis Co., Mo., wants rt. hand broadside views Southern Ry. Pacifics with 12-wheel tenders.

RICHARD O. PHILLIPS, 2126 N. Marengo Ave., Altadena, Calif., calls attention of railcamerists to Sou. Calif. Railfan and Photo Club; dues 25c a year.

JAY E. PITKIN, 1624 8th St., Bakersfield, Calif., trades emp. tts., 127V size pix, passes, card tickets, badges, books for similar rr. material from Eastern or foreign roads. Write first.

KEITH PRATT, Bloomfield Station, Prince Edward Island, wants to hear from English, Australian, and New Zealand railfans now in R.A.F. and stationed in Canada.

(*)G. C. PRIDE, 1465 East Whitmer, Decatur, Ill., sells A&P and Vgn. keys; Ill. Power and Light Corp. and Springfield Consolidated Ry. Co. fare tokens; and Decatur Traction & Elec. Co. transfers, 1902 series. Best offer.

WM. C. PRINN, Jr., 2331 W. Lanvale St., Baltimore, Md., pays cash for pix, 8x10 or larger, of trains or rr. scenes: also rr. souvenirs.

ARTHUR J. RICHARDS, 21 Briarfield Rd., Tyseley, Birmingham, England, wants pix of U. S. or Canadian locos or any mags. he can send to British hospitals. Wants letters.

Corp. ROBERT W. RICHARDSON, 35402746, President, Eastern Ohio Chapter, National Railway Historical Society, would like to hear from his old friends. He shipped out of Camp Stoneman, Calif. in Jan. and is now overseas. The address is: Hqrs. Co. 95th Signal Btn., A.P.O. 3422, c/o Postmaster, N. Y. City.

KENNETH D. ROBINSON, C. G. R. 1997, U.S.C.G. Station, Pt. Pleasant, N. J., wants pix of any rr. wrecks and n.-g. roads. Write first.

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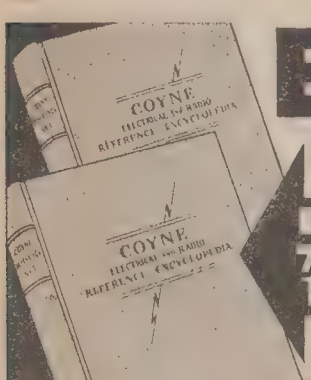

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(R)EDWIN H. SACKMASTER, 1619 Cunningham St., La Crosse, Wis., will sell *Railroad Magazines:* Sept., Oct., '36; July, Nov., Dec., '37; Jan., Feb., March, Ap., '38; March, Ap., May, Dec., '29; all '40; all '41 exc. Nov.; all '42 and '43 to date. Also books, emp. tts., etc. Stamp for list.

R. M. SHANGRAW, 2502 W. Eastwood Ave., Chicago, wants IC info., pix, and emp. tts.

ARTHUR STENSVAD, Box 634, North Platt, Neb., pays cash for p.c. pix of modern locos, streamliners, engines, trains, and unusual rr. subjects. Send list and price.

GEO. C. SLAWSON, 320 Riverside Drive, N. Y. City, (compiler of NYO&W roster) has over 200 diff. O&W loco prints for sale, mostly sizes p. c. or 5x7. Send 10c for list.

(R)JOHN TIERNEY, Jr., 47 4th Ave., West Haven, Conn., will pay 25c ea. for Jan., and Feb., '39 issues of *Railroad Magazine* (New Haven roster), good cond.

HAROLD TYLER, Box 1088, Phillips, Texas, will buy any size Santa Fe loco and train pix. Wants current Santa Fe roster.

(*)DICK VINCENT, 162 Park St., S., Hamilton, Ont., Canada, has size 116 pix Hamilton St. Ry., NS&J, Kitchener-Waterloo St., Ry. to sell or trade for BC Elec., Mont. & S. Counties, IT, and Cedar R. & Iowa, pref. size 116. Former correspondents write.

(*)Pvt. VICTOR G. WAGNER, 6341 S. Wolcott Ave., Chicago, will trade or pay cash for any size pix and negs. of Indiana RR., Dayton & Western, Interstate Pub. Service Corp., Texas Elec. and Wichita Traction Co. Esp. wants pix of gas-elec. motor cars in frt. or pass. service, on steam roads, ex-C&TE and IR frt. motors.

(*)ROBT. E. WALLICH, 3320 McComas Ave., Kensington, Md., has pix of CT Co., W&OP, WB&A, H&F, etc., to trade for PE or LA Ry. or other Calif. elec. lines. Also trades maps, transfers. Californians, write.

MAX WARNER, 150 S. Santa Fe St., Hemet, Calif., will trade few AT&SF orders for any Eastern road exc. NYC or PRR.

ARTHUR J. WEINMAN, 94 Sylvester St., Rochester, N. Y., will buy good pix, any size, of NYC 1919 (formerly 1763) or locos in same series of same class, 2-6-0 type; pref. builder pix.

(*)ELMER WELSH, 622 Walnut St., Coatesville, Pa., will trade set of 57 current N. Y. City streetcar transfers for pix of cabooses, pref. Pennsy.

JACK WELCH, 16 Garfield Ave., Norwich, Conn., trades CV train orders for those of other roads.

CHAS. WINTERS, 1708 S. R. St., Ft. Smith, Ark., buys good clear negs., size 116, any road. Swaps MoP, Frisco. Wants AT&SF types 2-6-0, 4-6-0, 2-8-0, 2-6-2, 4-6-2, 2-10-0. Answers all mail.

(R)RICHARD H. YOUNG, 209 E. Lincoln, Wellington, Kan., wants Aug. '39 *Railroad Magazine* with Alaska RR. material.

(*)H. L. YOUNGER, R. F. D. 1, Harbor Creek, Pa., buys and trades size 616 or p. c. pix of std. gage steam locos, esp. streamliners or other heavy duty types, incl. elecs. of U. S. and Canada. Buys and rents clear negs. of same size pix and locos. Trades rr. seat checks and tts. for trolley, bus transfers. Send list and prices.

(*)A. ZUBER, 8528 89th St., Woodhaven, N. Y., will trade *Off. Guide,* Sept. '39, July '42, for 15 size 116 pix of interurban or city cars. Trades int. tts. for Lake Shore Elec., Sept. '37 and Clinton, Daven. & Mus., Sept. '37 for other int. tts. Trades emp. tts. of LSE, LIR and LV for emp. tts. of int. lines.

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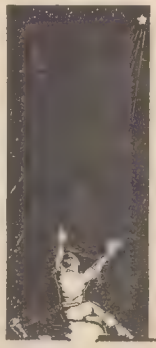

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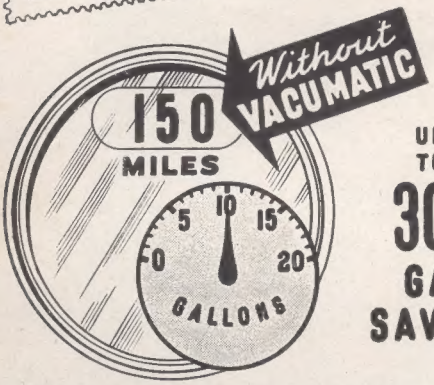
MOTORISTS *Wanted!*

TO MAKE THIS *UNIQUE TEST...*

of GAS SAVINGS



UP TO **30%** GAS SAVINGS

Car Owners: You are invited to make a gas saving road test with the Vacu-matic on your own car, with the absolute understanding that unless it proves to you that it will save you up to 30% on gas and improve your car performance, the test will cost you nothing. Investigate this remarkable discovery that trims dollars off gasoline bills—gives you worthwhile gas savings—more power—quicker starting—more miles on less gas.

Automatic Supercharge Principle

Vacu-matic is *entirely different!* It operates on the supercharge principle by automatically adding a charge of extra oxygen, drawn free from the outer air, into the heart of the gas mixture. It is entirely automatic and allows the motor to "breathe" at the correct time, opening and closing *automatically* to save dollars on gas costs.

Proven By Test

In addition to establishing new mileage records on cars in all sections of the country, the Vacu-matic has proven itself on thousands of road tests and on dynamometer tests which duplicate road conditions and record accurate mileage and horse power increases.

Fits All Cars—Easy to Install

Vacu-matic is constructed of six parts assembled and fused into one unit, adjusted and *sealed at the factory.* Nothing to regulate. Any motorist can install in ten minutes. The free offer coupon will bring all the facts. Mail it today!

The Vacu-matic Co., Wauwatosa, Wis.

Sworn Proof of Gas Savings

This certifies that I have carefully read 300 original letters received from Vacu-matic users testifying to gas savings up to 30%, many reporting added power, smoother running, and quicker pick-up. These letters are just a small part of the larger file of enthusiastic user letters that I saw at the company offices.

Signed

Notary Public

AGENTS Get Yours FREE For Introducing

Vacu-matic offers a splendid opportunity for unusual sales and profits. Every car, truck, tractor, and motorcycle owner a prospect. Valuable territories now being assigned. If you help us introduce it to a friend, you can obtain your own free. Check and mail coupon today.

SEND THIS *Free Offer* COUPON

THE VACU-MATIC COMPANY
7617-816 W. State St., Wauwatosa, Wis.

Please send full particulars about VACU-MATIC, also how I may obtain one for my own car FREE. This does not obligate me in any way.

Name .....

Address .....

City..... State.....

☐ Check here if interested in Agency Proposition.

"Dizzy Gossip Costs Lives!"-says HATT to HI

DON'T BUILD UP RUMORS!

A guy can frame his country
By talkin' out of turn
An' circulatin' rumors
That spies are keen to learn;
So don't build up no stories
That's dangerous, if true,
And when you hear a rumor,
Just kill it, p.d.q.!

(Signed)
Mr. Hi and Mr. Hatt

KESSLER'S
BLENDED WHISKEY

85 Proof, 45% Straight Whiskies 55% Grain Neutral Spirits. Julius Kessler Distilling Company, Lawrenceburg, Indiana.

SCAN COURTSEY OF
EXCITER